

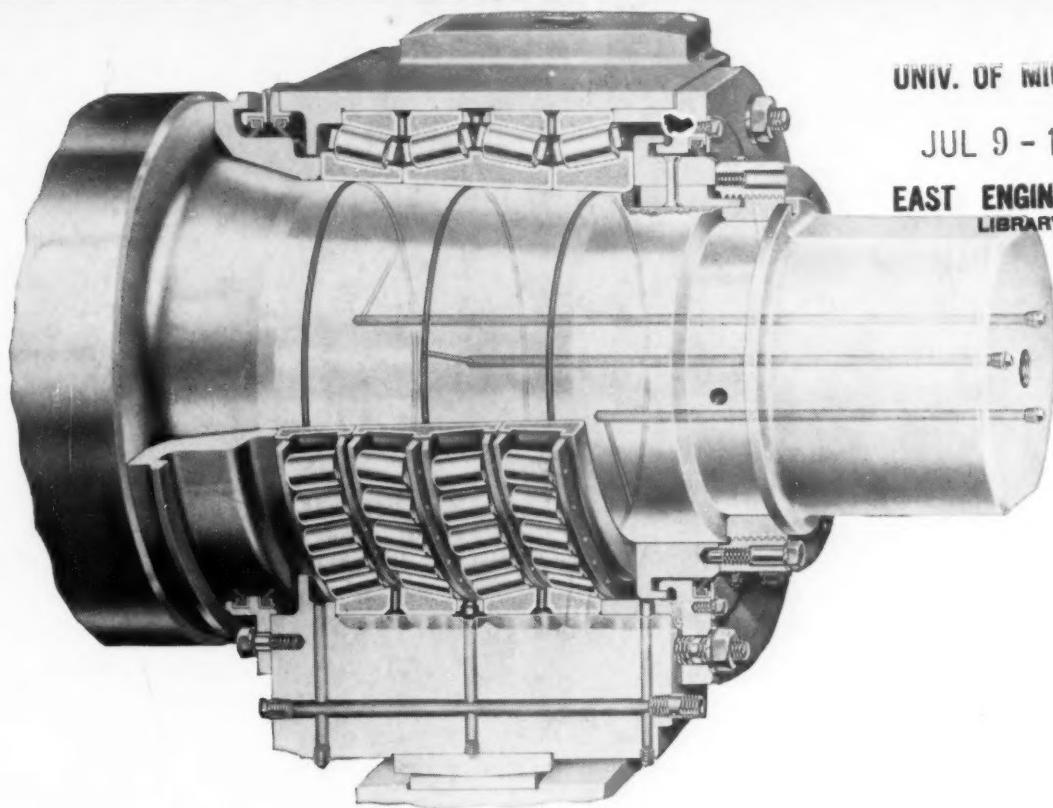
The IRON AGE

A CHILTON PUBLICATION

E NATIONAL METALWORKING WEEKLY

MENTS PAGE 2

July 8, 1954



UNIV. OF MICHIGAN

JUL 9 - 1954

EAST ENGINEERING
LIBRARY

New tapered bore TIMKEN® bearing has interference fit—yet can be removed easily

THIS Timken® TQIT bearing gives you maximum capacity for high-speed roll necks. It has an interference fit, yet it can be removed quickly and easily. All you have to do is expand its cones hydraulically.

This Timken roller bearing, like other Timken roll neck bearings, gives you better steel, more uniform gage and less scrap loss. That's because there's no need to change the screw-down pressure when the mill comes to speed.

To get into production, you make the screw setting, put the load on the Timken 4-row tapered roller bearings and start the mill rolling. Adjustment is maintained while mill operates under various loads and speeds.

Timken bearings use economical

grease lubrication. Complicated lubricating systems are eliminated. There's no loss of lubricant during roll changes. Rolls can be changed faster because there are no pipes or tubes. And there's less leakage of lubricant because Timken bearings keep housings and shafts concentric, making closures more effective.

There's no need for special thrust bearings because the tapered construction of Timken bearings enables them to take any combination of radial and thrust loads. And Timken bearings make possible higher mill speeds. Their true rolling motion and incredibly smooth surface practically eliminate friction. Starting resistance is reduced to a minimum. Result, no roll scuffing, no scoring of steel.

This is the world's first 4-row tapered bore bearing. And it's the greatest development in roll neck bearing design since the Timken Company pioneered the first balanced proportion bearing in 1941.

Write now for more information on how this new bearing can benefit your mill. Address The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



ROTARY KILN WITH RAW MATERIAL STORAGE SILOS IN THE BACKGROUND.



Only through extensive, modern production facilities and by continued product development can we furnish the steel industry with a dependable supply of granular basic refractories—premium products at competitive prices.

BASIC REFRactories INCORPORATED CLEVELAND 15 OHIO

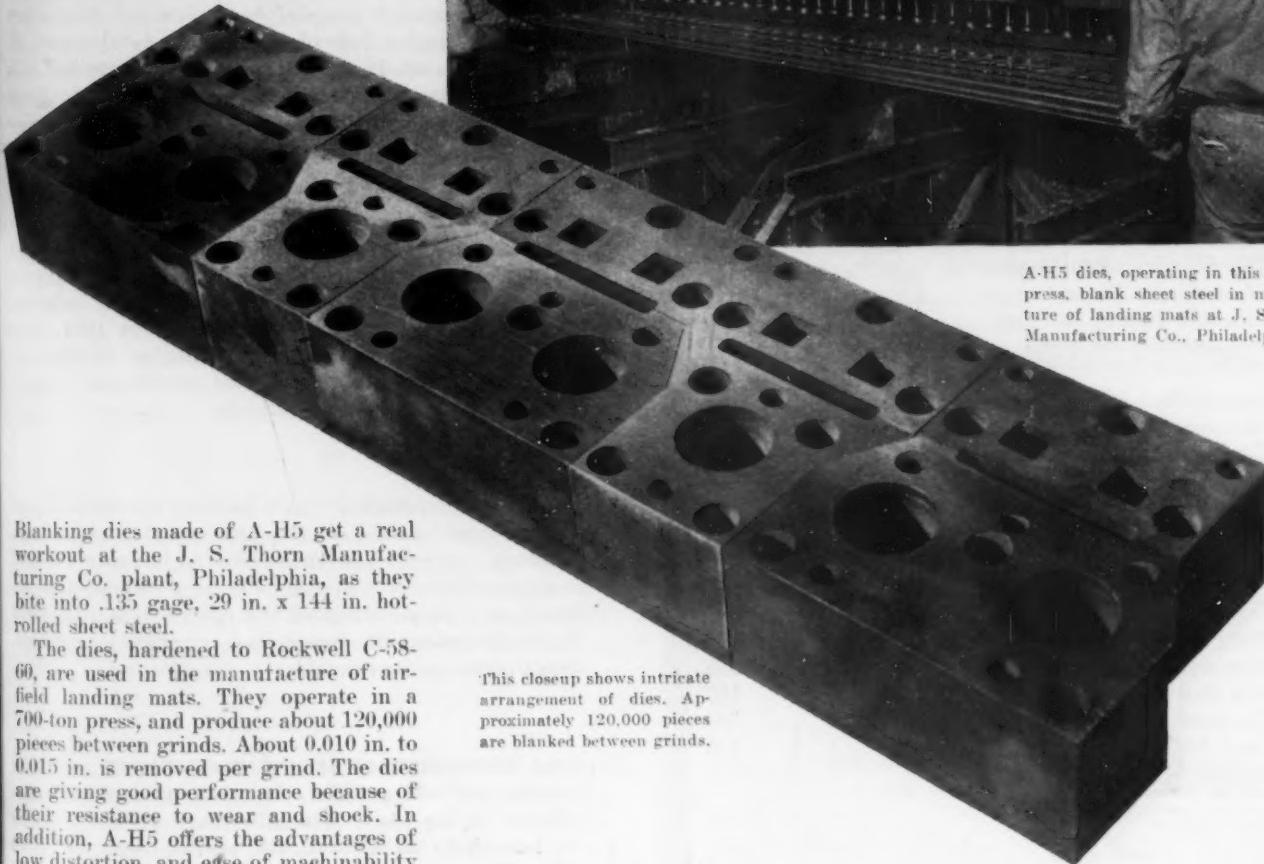


Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

Dies of A-H5 Give Good Service in Turning Out Landing Mats



Blanking dies made of A-H5 get a real workout at the J. S. Thorn Manufacturing Co. plant, Philadelphia, as they bite into .135 gage, 29 in. x 144 in. hot-rolled sheet steel.

The dies, hardened to Rockwell C-58-60, are used in the manufacture of airfield landing mats. They operate in a 700-ton press, and produce about 120,000 pieces between grinds. About 0.010 in. to 0.015 in. is removed per grind. The dies are giving good performance because of their resistance to wear and shock. In addition, A-H5 offers the advantages of low distortion, and ease of machinability and heat treatment.

A-H5 is our 5-pct-chrome air-hardening tool steel. It's an easy tool steel to machine, too, as it can be annealed to 212 Brinell.

Typical Analysis

Carbon	1.00	Molybdenum	1.10
Manganese	0.60	Vanadium	0.25
Chromium	5.25		

A-H5 is an economical steel for dies, punches, and forming and blanking tools. It is well liked wherever safe hardening, low distortion and increased resistance to wear are required. Why not give it a trial? Your nearest Bethlehem tool-steel distributor can supply you promptly.

This closeup shows intricate arrangement of dies. Approximately 120,000 pieces are blanked between grinds.



BETHLEHEM TOOL STEEL ENGINEER SAYS:

Avoid Premature Failure—Don't Make Shock Tools Too Hard

As a rule, shock-resisting tool steels perform best when they are hardened to Rockwell C-55/C-60. At such a range, there's a good compromise provided between toughness and resistance to wear. When premature failure occurs in these grades, it can usually be traced to excessively high hardness.

But rather than harden shock-resisting steels to Rockwell C-59 or higher, when such hardnesses are required, it would

be better to select a carbon tool steel.

When greater wear-resistance is required, the chrome-tungsten grades of shock-resisting tool steel may be carburized to provide a hard case and a shock-resisting core. The carburized case used for this type of shock-resisting steel should be only 0.010 deep. This method can be used to good advantage when you are manufacturing such items as reamers, swaging dies and master hobs.

The Iron Age

Vol. 174, No. 2, July 8, 1954

Starred items are digested at the right.

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DIGEST of

NEWS DEVELOPMENTS

STEEL PRICES INCREASED \$3.24 PER TON — P. 47
Producers and consumers will share the cost of the steel labor settlement. Price rise averaging \$3.24 per ton covers about three-fourths of expected ultimate cost increase. Steelmakers will absorb the rest. Expect stiffer competition among producers. List of price increases by products.

START QUEBEC-LABRADOR ORE SHIPMENTS SOON—P. 50
After more than 3 years of headaches and heartaches the great Quebec-Labrador iron ore development is about completed. High grade ore is being readied this month at Ruth Lake Mine No. 3 for shipment. First official trainload will leave July 31 and will be accompanied by American and Canadian bigwigs.

AIM NEW BLAST AT MILITARY SCRAP PLANTS — P. 53
House subcommittee says all possible military scrap operations should be turned over to private industry. Report tonnages processed by military in 1953. List shears, presses now surplus. Challenge validity of calculations showing government profit—say unprocessed scrap was called worthless.

INDUSTRY OUTLINES ATTACK MOP-UP PLANS — P. 60
Washington officials, fearing industrial complacency, have given a good pat on the back to Koppers Co. and American Machine & Foundry Co. for their well-mapped emergency plans. Basis of the programs is just good business—protecting investment, records, equipment. Don't count on outside aid.

WILL DEBUT DIECAST ENGINE IN DECEMBER — P. 68
Automakers will get their first look at a diecast aluminum engine block late this year. It won't spark an immediate switch but will provide basis for first serious consideration. Huge new Doehler-Jarvis machine aimed at aluminum block. Biggest roadblock is investment in existing engine facilities.

CHOP VANCE PLAN FUNDS TO \$100 MILLION — P. 73
Pentagon buying of reserve tools and machinery, set to get under way late this year, will operate under a much more limited budget than originally planned. Economizers pruned the \$250 million to \$100 million in a compromise between the Senate "Okay" and the House "Nix." Still wait complete inventory.

the Week in Metalworking

ENGINEERING & PRODUCTION

EXTEND USES OF NICKEL IMMERSION PLATING — P. 91

Ability to produce uniform deposits on internal as well as external surfaces is a major advantage of the nickel immersion process. Deposits have other superior properties which make these coatings desirable for many new applications. As-plated, coating hardness is about 45Rc; heat treated hardness runs to 70 Re.

FERROMANGANESE FURNACE FUMES CLEANED — P. 95

Ferromanganese furnace gases, hard to clean because of the fineness and type of dust contained, are now being successfully cleaned at the Duquesne Works of U. S. Steel Corp. The specially designed equipment, combines gas conditioning towers, electrostatic precipitators, and dust handling equipment.

CARBIDE DRILLS SPEED SLAG REMOVAL — P. 98

Three-wing carbide drag bits have provided a faster, cheaper, and safer tool for drilling holes in blast furnace slag. Cumbbersome, core drill rigs have been replaced by hand-held rotary drills. Drag bits are threaded onto hollow drill strings. A job which formerly required 2½ hours can now be done in 8 hours.

DROP WEIGHT TEST FOR NOTCH DUCTILITY — P. 100

Here is a simple test method for measuring notch ductility in nodular iron. The test, equally useful to consumer and producer of nodular iron castings, is based on sensitivity of notched materials to brittle fracture at lower temperatures. The point of nil ductility can be located within a narrow temperature range.

GEAR SHAVING INSURES BACKLASH CONTROL—P. 104

Gearing accuracy, a must for modern, high speed multi-color presses, receives special attention at the plant of this printing press maker. Meehanite and steel gear blanks are heat treated to close tolerances. A rough and finish hobbing precedes final rotary shaving. Involute profile and tooth runout are closely controlled.

NEXT WEEK — INDUSTRIAL MOVIE ON LOW BUDGET

There's no mystery to making a good industrial movie on a low budget. Here's how a steel mill turned a story idea into a 16 minute sound film hit in just about 30 days—at a total cost of \$2500. Starting with a good story to tell, the company turned the story into a successful script with "see" and "hear" elements.

MARKETS & PRICES

BAR COLD-FINISHERS SEE GRADUAL PICKUP — P. 57

After drawing 2,194,375 tons of cold-finished bars in '53, business has slumped. Shipments through April averaged only 55 pct of a year ago. But mild optimism is noted despite shell cutbacks and dip in automotive demand. Farm equipment, appliance manufacturers expected to boost orders.

LAKE IRON ORE SHIPMENTS SLOW TO WALK — P. 59

Lagging steel production plus high mill stockpiles have combined to curtail drastically 1953 shipments of Lake Superior iron ore. Shipments are now averaging about 10 million tons monthly, and year's total will be anywhere from 25 to 30 pct under 1953. Slump has cut sailor hiring and shipbuilding.

WHAT TO EXPECT FROM STEEL SETTLEMENT — P. 65

Direct cost of steel wage-pension-insurance package to steel users will be around \$113 million. But don't expect higher steel prices to boom demand for competing materials. Steel pact will cause Reuther's auto-workers to make determined drive for even greater pension increases.

METALWORKING FIRMS FACING BIG PROBLEMS—P. 133

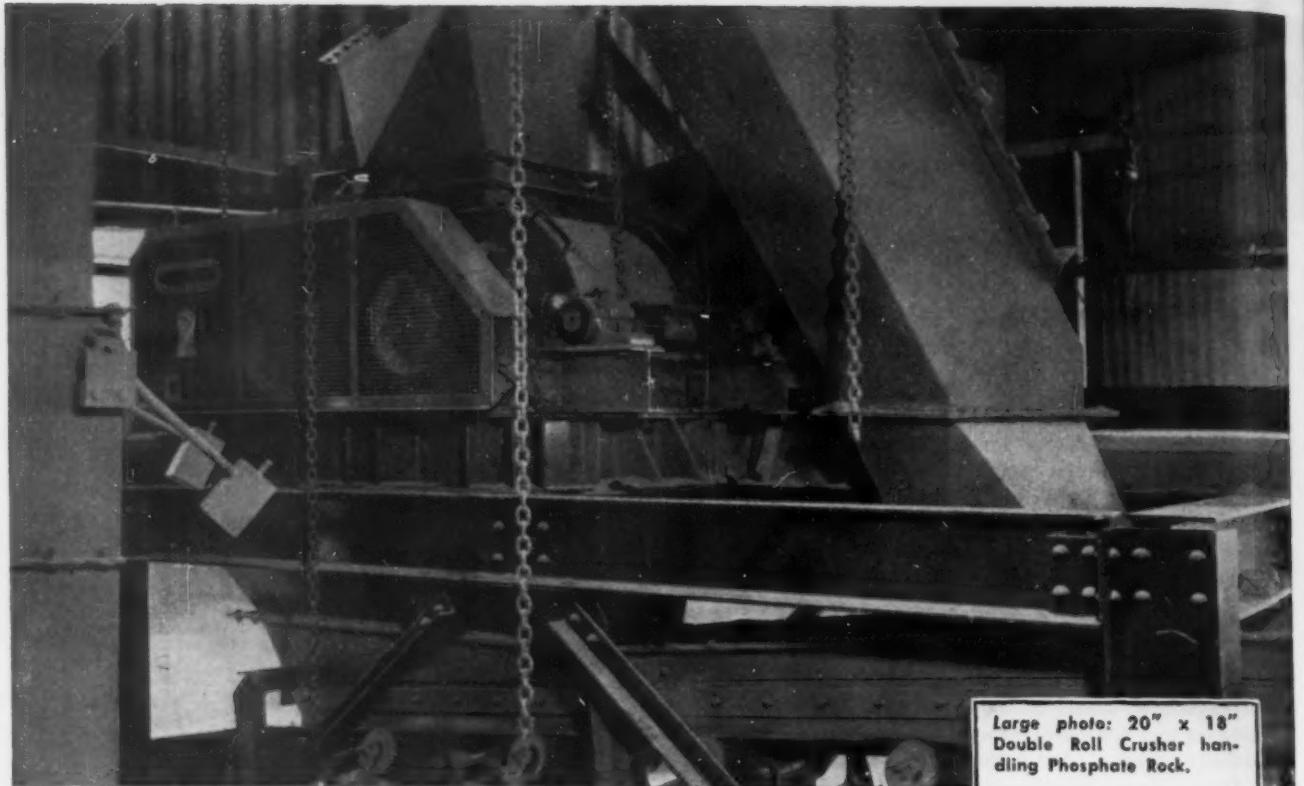
Two major problems confront many of the nation's metalworking companies as a result of the increase in steel wages and prices. They will have to decide what to do about their own wages. And they will have to decide whether to absorb the steel cost increases or try to pass them on to customers.

STEEL SLUMPS NOW, MAY PICK UP IN AUGUST—P. 135

The predicted July slump began to take hold and depress the already slack steel market. Higher prices resulting from the steel settlement are not expected to affect the market. Lull in auto business as model changeover approaches has caused a letdown in sheet and strip markets.

WHAT STEEL SETTLEMENT MEANS TO METALS—P. 136

Signing of the 1954 steel wage contract will bring galvanizers back into the zinc market, prevent any collapse a strike would have caused. Tin buying should also step up. And labor negotiations in the aluminum industry are now getting under way. Increased wage costs will mean an aluminum price hike.



JEFFREY crushers and pulverizers solve reduction problems from Alum to Zinc

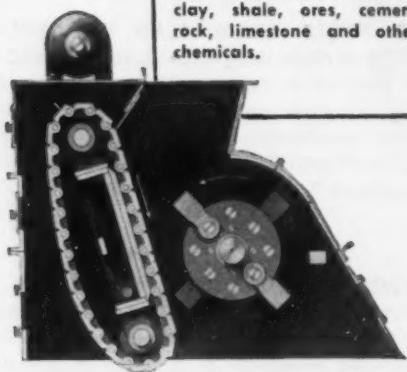
Jeffrey's Pulverizers and Crushers are the ideal solution to material reduction problems. Hundreds of these standard units are giving efficient, economical service to leaders in your industry. Each is backed by Jeffrey's unequalled experience in this field. Each includes many features only Jeffrey provides.

Whether your material is large or small, wet or dry, Jeffrey has the right machine to crush it . . . ranging from heavy-duty Type B Pulverizers for reducing quarry-size limestone . . . to Junior Pulverizers for laboratory work.

Our laboratories will make a crushing or pulverizing test on your material without charge and recommend the exact type Jeffrey equipment for your requirements.

Large photo: 20" x 18"
Double Roll Crusher han-
dling Phosphate Rock.

Cross-section: Jeffrey Mud Hog Crusher with traveling breaker plate for handling wet, sticky material such as clay, shale, ores, cement rock, limestone and other chemicals.



TYPICAL JEFFREY REDUCTION UNITS

FLEXTOOT® Crushers

Heavy Duty Rock Crushers

Single Roll Crushers

Swing Hammer Shredders

Double Roll Crushers

Swing Hammer Fulverizers

Rigid Hammer Shredders

Metal Turnings Crushers

Impact Type Crushers

Mud Hog Crushers

Write for descriptive literature.



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IF IT'S MINED, PROCESSED OR MOVED
. . . IT'S A JOB FOR JEFFREY!

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**Indexed in the Industrial Arts Index
 and the Engineering Index.**

Editorial

The Iron Age

FOUNDED 1853

Union Competition

THE steel wage agreement last week represented collective bargaining without the aid of the government. It also marked a new record for the absence of acrimony and soap box oratory on the part of the steel union. That was a feather in the cap of Dave McDonald, steel union head.

A better tone in steel business and a trend towards some inflationary factors strengthened the hand of the union to the extent that it could afford to take a chance and turn down the first steel offer. Had that original 5¢ an hour package offer been accepted, there is good reason to believe that there would have been no increase in the price of steel. But with a new wage cost increase approaching 12¢ an hour the price increase was a foregone conclusion.

How long these wage and price rounds can continue remains to be seen. There has been an uninterrupted round of wage and fringe increases since 1937—except for a short period during the war. Maybe it can go on for years—and maybe it will—but there must be a limit some place. This time the cents per hour increase was the smallest in any of the nine rounds of wage hikes. Maybe that is a good omen.

The steel industry was shoved out front in the wage race several years ago. Because of that it is called the pattern maker. This year will be no exception. Thousands of steel users will find their wage demands running along the lines of the steel settlement. Next spring wage negotiations take place in the auto industry. It is then that we will find the clue to next year's steel union demands.

There is no use begging the question. Demands by the steel and the auto unions have often been the direct result of competition between these two groups and their leaders. As long as that condition continues the steel industry will be in the middle—and so will those firms which follow suit on steel agreements.

The pension settlement of a minimum of \$140 a month was to satisfy the competition of the \$137.50 a month minimum granted last year in the auto industry. The welfare plan was also a bid for treatment similar to other industries. The 5¢ an hour raise was to match the recent auto productivity raise.

It is not a healthy condition for either the union or the steel industry to be guided by competition between rival unions or their leaders. There has to be a day of reckoning.

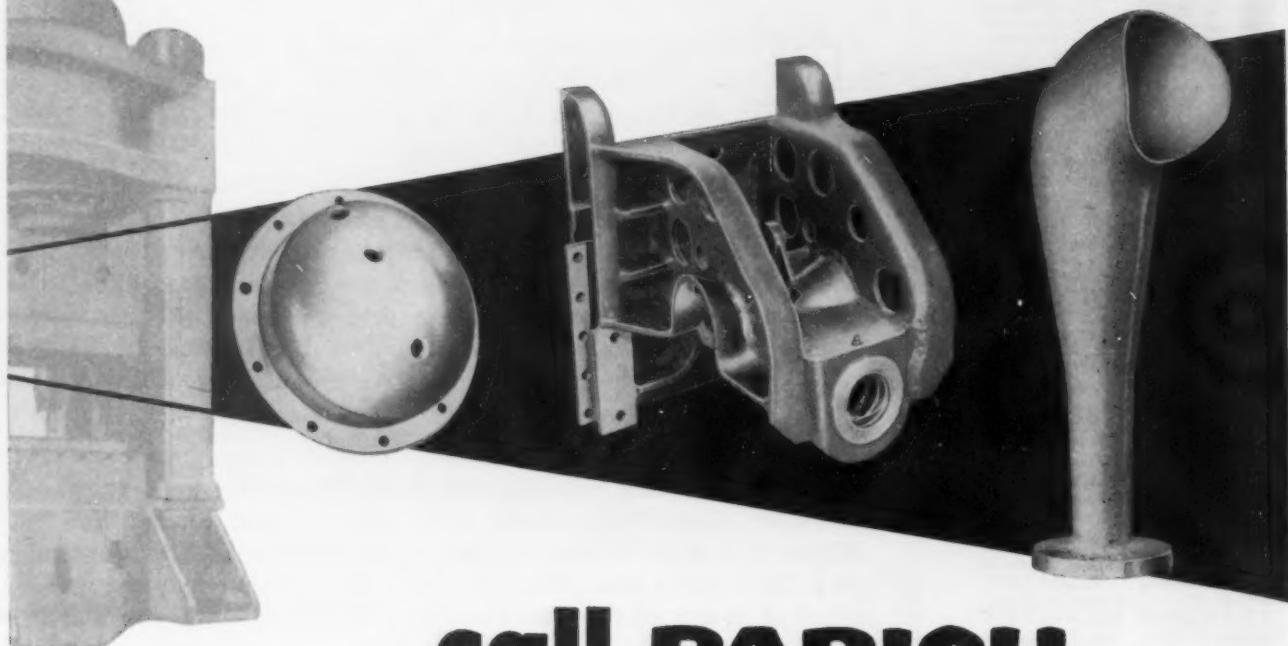
Tom Campbell

Editor



for PRESS production

from Aluminum to Stainless



...call PARISH

When you need parts of any analysis—aluminum, carbon steel, high tensile steel, heat-treated alloy steels, or stainless—big parts or small ones, simple or complex, bolted assemblies or weldments—your best bet is Parish.

Here's why. We have the men, trained and ready for high-run production. We have the presses, and we have the room to do the job right.

But that's not all. If you have a design or engineering problem, need to cut costs, want to improve a part in performance or appearance, we have the experience to help.

Put all the things Parish has to offer you to work now—to help improve your production and profit picture. Write, 'phone or telegraph, or just send us a print or sketch-drawing. We'll be glad to tell you what we can do without obligation.



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PARISH PRESSED METAL PARTS

FOR BETTER PRODUCTS

Dear Editor:

Letters from readers

Cold War

Sir:

Congratulations on your editorial, "Russia Is At War With Us," in the June 17th issue. We need more like that....

A. B. WILSON

Vice-President-Special Products

Acme Steel Co.

Chicago

New Polyester Film

Sir:

On the Newsfront page of the June 3 issue a "new high strength polyester film" was mentioned.

Would it be possible to obtain more information on this product.

J. B. DOTSON
Chief Metallurgist

Rockwell Mfg. Co.
Oakland, Calif.

More details may be obtained from E. I. DuPont de Nemours & Co., Inc., Wilmington 98, Del.—Ed.

Who Pays For Pensions

Sir:

Your editorial "Who Pays For Pensions?" in your June 3 issue was of great interest to the writer. There is a world of truth and material for thought in your editorial.

If you have any extra copies of your editorial we would appreciate receiving some for it is well worth passing among our employees for reading.

F. M. WHIPPLE
President

Springfield Metallic Casket Co., Inc.
Springfield, Ohio.

Press Feed

Sir:

The information we seek concerning the press feed, is the manufacturer of the unit shown in the picture on p. 120 of your June 10 issue.

R. L. SPRINGSTON
Methods Engineer

Stewart-Warner Corp.
Chicago

For more information about this unit contact Jaco Devices, 102 High St., Hingham, Mass.—Ed.

Machinability of Titanium

Sir:

We would greatly appreciate receiving 25 copies of the article appearing on p. 122 of the June 10 issue

of THE IRON AGE. This is Part III of the Air Force Machinability Report on titanium and applies to belt and wheel grinding of this metal.

J. R. SHORT
Secretary

Hill Acme Co.
Cleveland

Sir:

We certainly have enjoyed reading the article on titanium that appeared in the June 10 issue of your magazine....

On p. 122 you had a picture of the set up used for testing the belt grinding power requirements. We have been very interested in setting up such a testing machine and we would appreciate receiving information on where we might obtain further data on the actual design of this tester.

R. P. VILLWOCK
Research & Development Eng.
Mid-West Abrasive Co.
Owosso, Mich.

Additional data on this machine may be obtained from Norman Zlatin, Metcut Research Associates, 3980 Rosslyn Drive, Cincinnati 9, Ohio.—Ed.

Plastic-Faced Dies

Sir:

In your Feb. 4 issue you mentioned on p. 81 (IRON AGE Newsfront) that "roughed-out steel dies with plastic facings are being used in the aircraft industry...."

I wonder if you could give me some additional information on this subject, either the name of the aircraft factory where these dies are used or the maker of these plastic-faced dies.

L. G. RUCQUOI

New York

More information may be obtained from Boeing Airplane Co., Seattle 14, Wash.—Ed.

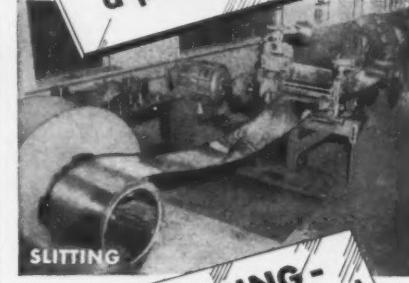
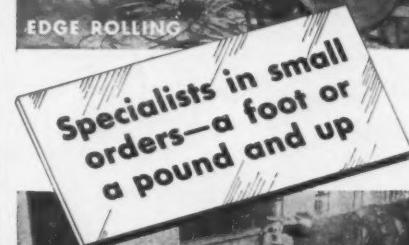
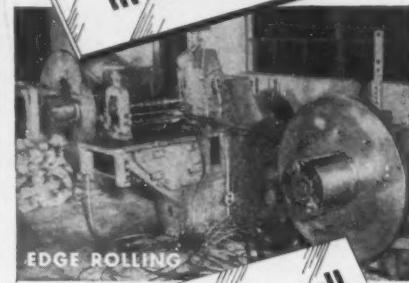
Gear Inspection

Sir:

Several of our engineers have requested copies of the article "Choose Gear Inspection Methods to Meet Product Needs" by Fred Bohle, which appeared in the May 27 issue.

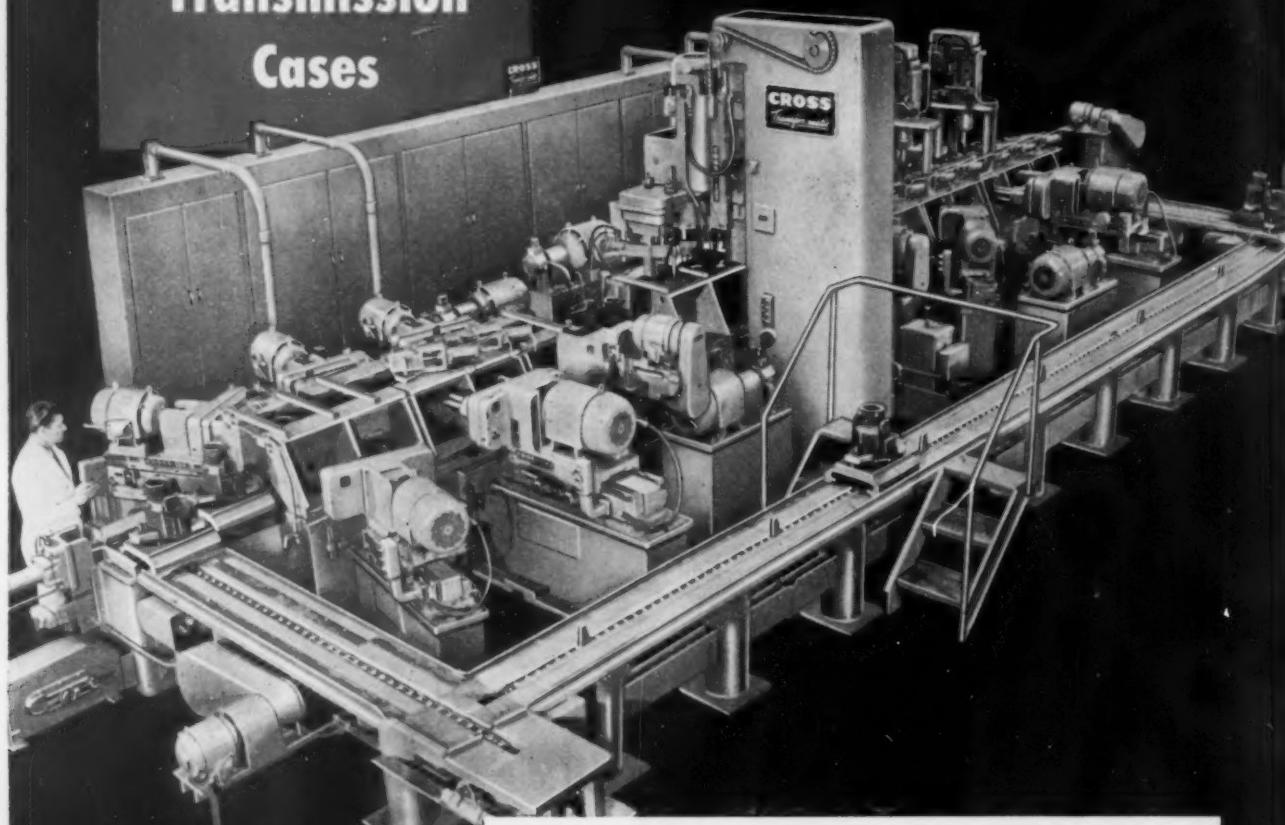
I would appreciate it very much if you could send me five or six tear sheets of this article and I will pass them on to the engineers who requested them.

R. A. McCLENEGHAN
Advertising Manager
Barber-Colman Co.
Rockford, Ill.



**Drills, Bores,
Reams and Taps
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Cases**

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THE **CROSS** CO.
DETROIT 7, MICHIGAN
Special MACHINE TOOLS

Fatigue Cracks

by William M. Coffey

The "Voice"

We have been referred to as the "voice of the steel industry" by no less a personage than the Honorable Watkins M. Abbott of Virginia on the floor of the House of Representatives, and his sage words have been properly recorded in the Congressional Record. The Honorable Mr. Abbott quoted from our May 13 issue (an article entitled "Blast Red Manganese-For-Food Hints" by our Washington staff chief, George Baker) and he expressed as much concern as did George about our dealing with the Russians over manganese.

This, of course, is not a unique occurrence. It happens frequently. We're used to it. By last actual count, matter of fact, your *ffj* was mentioned in newspapers as the "voice of authority" 3,323 times in just a 6-month period. We only tell you this because it's true and to lead you into one of the most interesting of these "mentions."

The following story appeared in the *Cleveland Plain Dealer*. It concerns a conversation between Karl Ritter, Hitler's chief of the economic division, and Joachim von Ribbentrop, Foreign Minister, which was brought out during the Nurnberg trials. Ritter speaks:

"One day in 1941 Ribbentrop called me up and said, 'Do you deem it correct, Ritter, that American steel production amounts to 110,000,000 tons?'

"I considered this figure somewhat too high and told him that it would be between 60 and 70 million tons."

"Ribbentrop replied: 'Oh, you, too, fall victim to this bluff . . .'

"This is no bluff, I said, because for 40 years I have read THE IRON AGE. Every economist in the world reads it, as it is an economic barometer. Do you believe, Mr. Foreign Minister, that they were lying all these years, even before the war? Ribbentrop failed to answer this question . . ."

Many things have made your *ffj* the "voice," not the least of which is the fact that it is the only metalworking magazine in America recognized by the U. S. Post Office as essential enough to the welfare of the country to be granted "newspaper handling"—the fastest possible delivery. "This week's news, prices and markets this week." No other cigarette, beer or metalworking magazine can make that statement. (Wonder if Ritter read *Fatigue Cracks*.) Keep sending the money.

Stop Thief

George Conner of the Comstock & Co. advertising agency, Buffalo, handles the Columbus-McKinnon account. Columbus-McKinnon makes automotive and industrial chains—tire chains, tow chains, etc.

One day George took a heavy set of chains to his office to get them photographed for an advertisement. A meeting came up and it was pretty late at night before George left for home, lugging the chains in a canvas bag.

Along comes a robber, holds George up and swipes the bag, thinking, no doubt, it contained the day's receipts. He was probably in ecstasy until he opened it up. Now, we understand, he's out looking for George.

Puzzlers

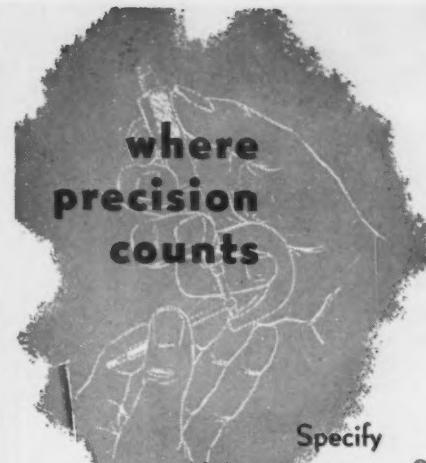
For all who monkeyed around with the monkey puzzler, the answer is 15 ft. Winners: P. A. Smith, B. G. Bassett, U. S. Diplomat, L. G. Bayrer, G. A. Meyer, John H. Harris, Jim Rhodes, and R. L. Stone, M. Finner, Howard Greaves, Thomas F. Horan, Lee Caplan, William H. Cole, Helen Delaney, Peter R. Donnelly, John F. Finnell, Howard Morrison, Harry Paley, Clifford Peterson, Catherine O'Mara, D. J. Ferguson, H. M. Longren and Frank Moffat. This was a jackpot puzzler.

New Puzzler

Take four friends whose occupations are butcher, baker, tailor and carpenter and whose names are Mr. Butcher, Mr. Baker, Mr. Taylor, and Mr. Carpenter. Each has a son and daughter, but no son practices the same trade as his father. None of the eight males practices a trade of his name. Each son marries one of the daughters, whose maiden name does not suggest his own or his father's trade. Each girl changed her initial when she married. Mr. Butcher, Sr., is not a baker. The trade of Mr. Carpenter, Sr. is the same as young Mrs. Butcher's maiden name. The baker's son married Miss Butcher. What trades are the fathers and sons in—and what are the maiden names of the sons' wives?

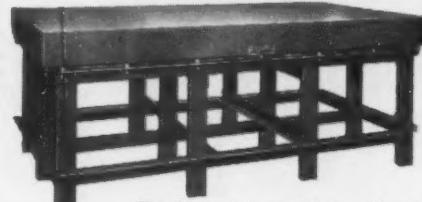
New, New Puzzler

What's the difference between a psychotic person and a neurotic person? Answer: The psychotic person thinks that 2 plus 2 equals 5. The neurotic person knows that 2 plus 2 equals 4, but it makes him nervous.



Specify

Challenge®



For layout, inspection, checking, lapping, assembly and welding operations . . . depend on the accuracy and stability of Challenge Precision Equipment. Mail coupon for information on Layout Surface Plates . . . Clamp Edge Layout Plates . . . Reading Tables . . . Lapping Plates . . . Welding Tables . . . Surface Plates . . . Bench Plates . . . Surface Plate Equipment.

Challenge Work Benches . . .



Four sizes. Cast iron top, two inches thick. Welded steel supports, tool box shelf, steel drawer with lock.

Challenge

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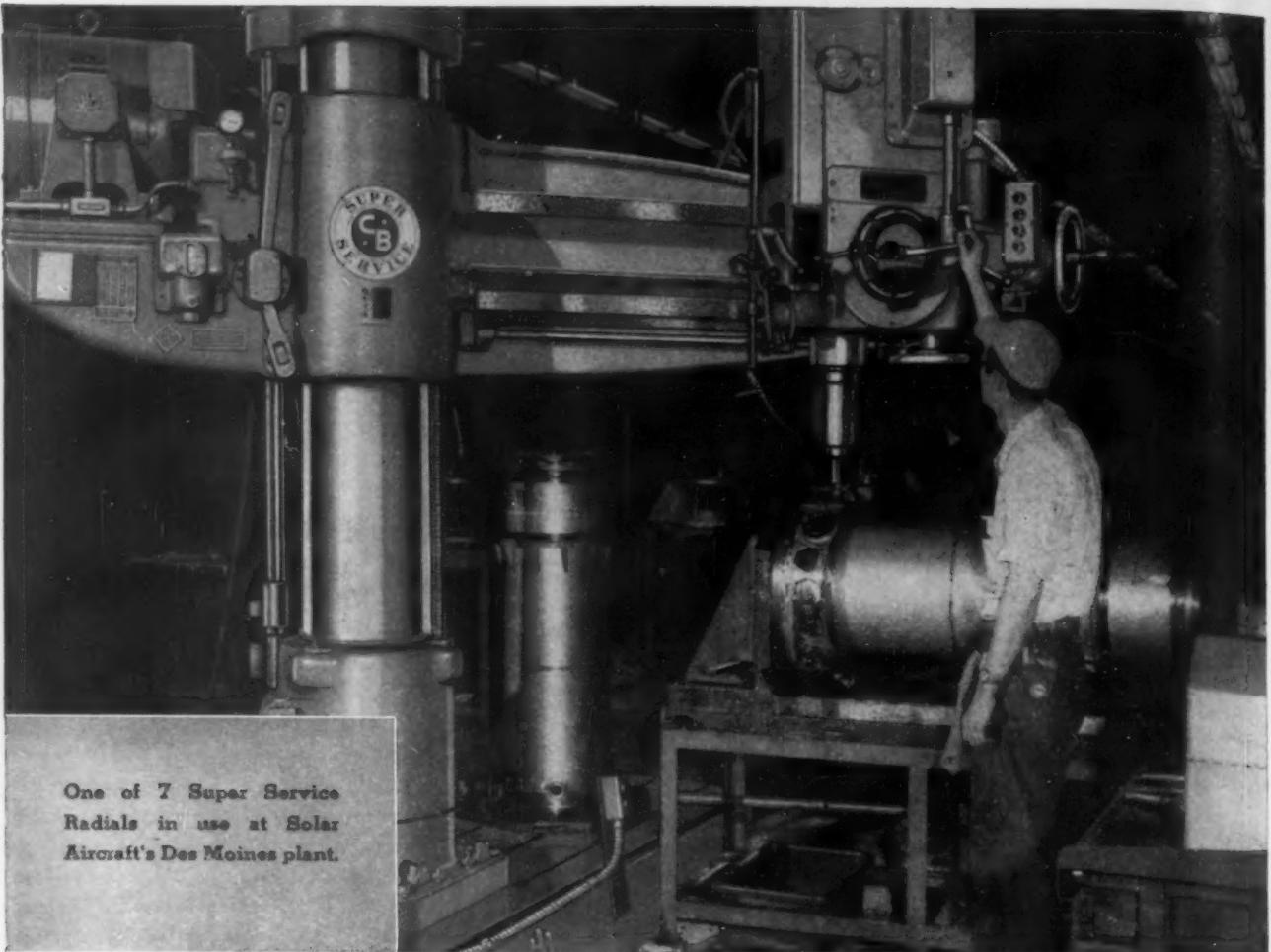
THE CHALLENGE MACHINERY CO.
GRAND HAVEN, MICHIGAN

Send details as checked below:

- Layout Surface Plates Work Benches
 Surface Plate Equip. Utility Bench
 General Catalog Welding Tables

Name _____

Full Address _____



One of 7 Super Service Radials in use at Solar Aircraft's Des Moines plant.

Photos courtesy Solar Aircraft Company, Des Moines, Iowa.

"well pleased . . ."

"Our production people and our plant engineering department, who install and service equipment, are well pleased with our Cincinnati Bickford drilling machines."

• Solar Aircraft Company

Both large and small Cincinnati Bickford Super Service Radial Drills are used here in producing jet engine components. The arm of the machine shown above is swinging over two working positions permitting the completion of all drilling operations at both stations with a minimum of work handling. Altogether there

are 10 holes drilled and reamed, 18 holes drilled and tapped, and two .656" dia. half moon radii accurately machined in this tough high-alloy steel. The accuracy, speed and trouble-free performance, the power and easy control of these machines have made them popular to both engineers and operators.

80 YEARS OF SERVICE

Write for Catalog R-29.

CINCINNATI
BICKFORD



RADIAL AND UPRIGHT DRILLING MACHINES

THE CINCINNATI BICKFORD TOOL CO.

Cincinnati 9, Ohio, U.S.A.

THE IRON AGE Newsfront

A MOTOR-DRIVEN PORTABLE PRESS FEED UNIT has been developed to transfer parts from a conveyor, deposit them into a press and unload the stamped part. The unit, consisting of two mechanical hands, is expected to be applied to machining operations.

METHODS FOR BRIQUETTING IRON FINES for direct charging into the open-hearth, are attracting considerable interest. Several steel producers are reported to have used this material on a production basis. One briquetting method is reported to use cement as a main binder ingredient. Another uses starch.

FULLY AUTOMATED GEAR FINISHING MACHINES have been developed for finishing helical transmission pinions about $1\frac{1}{4}$ in. in diam. A vibratory feeding device is used. From an automatic in and out gaging device tied into the machine, finished and gaged parts are automatically deposited on a conveyor line.

LOOK FOR SOMETHING ENTIRELY NEW in exterior styling and construction when the Ford's new Continental is finally revealed. Ford, striving for industry leadership, has adopted completely new approaches to automotive design.

MATERIALS HANDLING COSTS of construction firms are being cut by using improved methods and equipment. Capacity and operating range of mix-in-transit cement equipment have been increased. More palletized brick and tile are being used. Aim is to balance effect of an average 10 cents per hour wage increase in building trades.

RAPID GROWTH OF RADIOGRAPHY as a means of inspecting pipelines, welded tanks, spheres, etc., marks a big step in the industrial application of atomic energy products. Small capsule of Sodium 24 used on many jobs will beam rays through 12 in. of steel.

SILICONE RUBBER COATING on an aileron flap seal of the big, new Boeing B-47 Stratojet, is reported to have remained tight and flexible at -67°F . The coating adheres well to cloth and does not peel off at high speeds, it is claimed.

A NEW MAGNETIC TAPE RECORDER developed for use by the Navy is reported to withstand the grueling operating conditions that go with sea duty. The unit--it makes two recordings simultaneously--withstands severe vibration and temperature extremes, it is claimed.

ELECTRONIC CONTROLS HAVE BEEN USED in a new manipulator designed for atomic laboratories. Mechanical linkages which formerly limited the distance from which these unusual lifting tools could be used have been eliminated. Researchers may now stand several hundred feet from point of use.

LOWER RESIN COSTS IN SHELL MOLDING may be possible with two new liquid resins recently developed for the foundry industry. Shorter curing time, an important factor in shell production, is claimed for the new liquid resins.

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IN WEST

WATCH
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TUBING
BEING
MADE

PATCO INVITES YOU TO THE MOVIES

A twenty minute, sound, color motion picture has just been released by Pacific Tube Company, of Los Angeles. The film is a pleasant interesting education in steel tubing manufacturing. Animation drawings clearly show the tube reducing and drawing operations.

The largest drawbench in the West is shown in action.

This film can be made available to your company or organization without charge. Write to Film Department, Pacific Tube Company, 5710 Smithway Street, Los Angeles 22, California. Telephone Raymond 3-1331.

PACIFIC TUBE COMPANY
LOS ANGELES, CALIFORNIA
FOR SERVICE AND RELIABILITY

patco

Pacific Tube Company specializes in the manufacture of tubing from stainless, carbon and alloy steels. PATCO produces cold drawn seamless tubing, welded tubing, and cold drawn bars. Write for our catalog.

SEE
BIGGEST
DRAW-
BENCH
IN WEST

STEEL: Price Hike Averages \$3.24 A Ton

Boost covers three-fourths of expected ultimate cost increase

. . . Producers will absorb rest . . . See tighter mill competition . . . Bigger mills hurt less—By J. B. Delaney.

Steel producers and consumers are sharing the cost of the steel labor settlement.

On the basis of the usual criteria, the steel price increase which raised THE IRON AGE Finished Steel Composite Price by \$3.24 per net ton is about three-fourths the expected ultimate cost increase to producers. The balance will be absorbed.

Prior to settlement of the steel contract negotiations, THE IRON AGE had predicted price rises would average between \$3 and \$4 per ton.

Steel price increases by products are listed on p. 48

The industry's price action means that over the long haul the margin of profit on most steel products has been cut to the point where it hurts.

Better Off

Its inability to pass along the full cost of the wage settlement comes at a time when producers are absorbing freight charges and shaving extras in the face of a stiff competitive battle for business.

The large tonnage mills will be better able to carry the burden than specialty producers whose average of manhours worked per ton produced is higher than normal. But all will be worse off than they were before the new labor contracts went into effect.

Two immediate aftermaths of the settlement: (1) Increased competition; producers will have more incentive to push for business in an effort to maintain higher ingot rates and reduce unit costs, and (2) Intensification of the drive for increased efficiency in the mills.

Clifford F. Hood, president of U. S. Steel Corp., outlined the plight of steel producers in his announcement covering the price increase.

"The amount of the increase," he said, "is less than would be justified if cost consideration, continuing plant replacement needs of the corporation and stockholders' interests alone were considered.

"Competitive conditions . . . require, however, a lower price adjustment than would otherwise be justified by all considerations, including the public interest, in having a strong steel industry in this country."

Mr. Hood pointed to U. S. Steel's plan to borrow \$300 million as evidence of the need for more adequate earnings, which he placed at 5.8 pct of sales in 1953, a record-breaking year of steel production, and 5.4 pct of sales in first quarter of 1954.

Steel producers already were concerned over the apathy of po-

Steel Price Highlights

The steel price increases raised THE IRON AGE Finished Steel Composite Price by \$3.24 per net ton. Following are increases on some of the more common products:

Hot-Rolled Sheet & Strip	\$2.50
Cold-Rolled Sheets	\$3.50
Plates	\$2.50
Structurals	\$3.00
Standard Rails	\$2.50
Low Carbon Wire	\$4.50
Rerolling Billets	\$2.00
Hot-Rolled Bars	\$3.00
Cold-Rolled Bars	\$4.00

tential investors toward steel stocks. In recent years they have gone out of their way to court the stockholder and encourage investors to provide the necessary funds for modernization and expansion. Steel consumers are not likely to relish higher price levels and many of them may be forced to absorb at least part of the increase. But the industry's price action was not unexpected considering the magnitude of the labor settlement.

Turn Page



NEGOTIATORS CHEER as Joseph Molony (seated, left), director of USW's District Four, and Joseph M. Larkin (seated, second from left), Bethlehem Steel vice-president, sign new contract.

Special Report

Continued

Checklist of Steel Price Increases

Following are new mill prices of U. S. Steel, effective July 3. Prices are in dollars per net ton unless otherwise noted. Extras apply. Former prices are listed for comparison. Stainless steel prices are as yet unchanged pending further study.

	New Price	Old Price	Increase		New Price	Old Price	Increase
CARBON STEEL:							
Ingots, forging	\$ 81.50	\$ 50.00	\$ 2.50	Trenton and Worcester	150.00	144.50	5.50
Blooms, billets, slabs—forging	78.00	75.50	2.50	Nails	Donora, Duluth, Joliet, Rankin and Fairfield	Col. 137	Col. 131
Blooms, billets, slabs—rolling	84.00	82.00	2.00	Wire—merchant quality—annealed	Col. 143	Col. 137	
Skelp	78.00	75.00	3.00	Cleveland	138.00	133.50	4.50
Tube rounds	86.50	92.50	4.00	Donora, Duluth, Joliet, Rankin and Fairfield	138.00	133.50	4.50
HR bars, small shapes	86.00	83.00	3.00	Worcester	144.00	139.50	4.50
Fairless Works	89.00	86.00	3.00	Wire—merchant quality—galv'd			
Cold-finished bars	108.00	104.00	4.00	Donora, Duluth, Joliet, Rankin and Fairfield	144.00	139.50	4.50
Concrete rein. bars	88.00	83.00	3.00				
Structural shapes	89.00	86.00	3.00				
CB's (including CBL, CBJ and CB sections)	85.00	82.00	3.00				
Bearing piles	85.00	82.00	3.00				
Sheet piling	101.50	98.50	3.00				
Plates	84.50	82.00	2.50				
Standard rails							
No. 1 O.H.	89.00	86.50	2.50				
Light rails	107.00	104.00	3.00				
Tie plates	105.50	102.50	3.00				
Floor plates	105.50	103.00	2.50				
Joint bars for standard rails							
Track spikes	108.50	105.50	3.00				
Axles	146.00	141.00	5.00				
Hot-rolled strip	135.00	130.00	5.00				
HR sheets (18 ga. and heavier)	81.00	78.50	2.50				
Fairless Works	82.00	79.50	2.50				
Cold-rolled sheets	99.00	95.50	3.50				
Fairless Works	100.00	96.50	3.50				
Galvanized sheets, regular	108.00	105.50	3.50				
HIGH STRENGTH PRODUCTS:							
USS COR-TEN							
Structural shapes	128.00	123.50	4.50				
CB sections	128.00	122.50	5.50				
Plates	129.00	125.00	4.00				
HR bars, small shapes	129.00	124.50	4.50				
Hot-rolled sheets	122.00	118.00	4.00				
Fairless Works	123.00	119.00	4.00				
Galvanized sheets	164.00	158.50	5.50				
Cold-rolled sheets	150.00	144.50	5.50				
Fairless Works	151.00	145.50	5.50				
Hot-rolled strip	123.00	119.00	4.00				
USS MAN-TEN							
Structural shapes	105.00	101.00	4.00				
CB sections	105.00	102.00	3.00				
Plates	105.50	103.00	2.50				
HR bars, small shapes	102.00	99.00	3.00				
Hot-rolled sheets	98.00	95.50	2.50				
Fairless Works	99.00	96.50	2.50				
Hot-rolled strip	98.00	95.50	2.50				
USS ABRASION RESISTING							
Plates	107.50	105.00	2.50				
HR bars, small shapes	109.00	106.00	3.00				
Hot-rolled sheets	104.00	101.50	2.50				
Hot-rolled strip	104.00	101.50	2.50				
WIRE PRODUCTS							
Wire rods, carbon Donora, Cleveland, Joliet and Fairfield	93.50	90.50	3.00				
Worcester	98.50	98.50	3.00				
Cold-rolled low carbon strip Cleveland	115.00	109.00	6.00				
New Haven	130.00	124.00	6.00				
Worcester	132.00	126.00	6.00				
Wire—Mfrs. bright, low carbon Cleveland, Donora, Joliet, Duluth, Rankin, Waukegan and Fairfield	115.00	110.50	4.50				
Worcester	121.00	116.50	4.50				
Premier spring wire—high carbon Cleveland, Donora, Duluth and Waukegan	138.00	132.50	5.50				
New Haven, Trenton and Worcester	144.00	138.50	5.50				
MB spring wire—high carbon Cleveland, Donora, Duluth and Waukegan	144.00	138.50	5.50				
ALLOY STEEL							
Ingots	65.00	62.00	3.00				
Billets, blooms, slabs	88.00	82.00	4.00				
Hot-rolled bars	101.50	97.50	4.00				
Fairless Works	104.50	100.50	4.00				
Cold-rolled bars	132.50	126.50	6.00				
Plates	116.00	111.00	5.00				
Structural, bar shapes	104.00	100.00	4.00				
Hot-rolled strip	134.00	128.00	6.00				
OTHER ITEMS							
Electrical sheets	182.00	175.00	7.00				
Long ternes	117.00	113.50	3.50				
Enameling sheets	107.50	103.50	4.00				
COLUMBIA-GENEVA DIV.							
Plates							
Geneva	84.50	82.00	2.50				
Std. structural							
Terrace	99.00	96.00	3.00				
Geneva	85.00	82.00	3.00				
Hot-rolled bars							
Pittsburg	100.00	97.00	3.00				
Terrace	100.00	97.00	3.00				
Concrete rein. bars							
Pittsburg	100.00	97.00	3.00				
Terrace	100.00	97.00	3.00				
Tie plates							
Terrace	108.50	105.50	3.00				
Hot-rolled sheets							
18 ga. and over							
Pittsburg	95.00	92.50	2.50				
Geneva	83.00	80.50	2.50				
Galvanized sheets, reg.							
Pittsburg	124.00	120.50	3.50				
Hot-rolled strip							
Pittsburg	98.00	93.50	2.50				
Terrace	98.00	93.50	2.50				
Coil-rolled sheet							
Pittsburg	118.00	114.50	3.50				
Hot-rolled rods							
Pittsburg	106.50	103.50	3.00				
Terrace	109.50	106.50	3.00				

Special Report

Several weeks before the industry and USW agreed on terms, THE IRON AGE predicted that prices would rise (THE IRON AGE, May 6, 1954, P. 77, and June 17, 1954, P. 97). Producers tried without success to make a settlement that they could absorb without increasing prices. Their initial offer of 4.5¢ on wages and insurance, plus \$130 per month pensions, was made on this basis. But the offer was not acceptable to the union.

Gains Prestige

Final settlement, arrived at just 2 days before the June 30 contract expiration, calls for a package costing between 10¢ and 12¢ per hour. It includes a 5¢ wage increase, improvements in social insurance, and a \$140-per-month minimum pension for 30-year employees. Also the worker will receive the benefit of any increases in social security. Settlement was another feather in the cap of David J. McDonald, union president, who last year negotiated a wage increase of 8.5¢.

McDonald's prestige as a national labor leader also is at an all-time high. Settlement puts his steelworkers away out in front of the autoworkers, whose union is headed by Walter Reuther, president of the CIO. McDonald makes no secret of his antipathy toward Reuther.

Compete With Autoworkers

This competition between McDonald and Reuther undoubtedly was a factor in the USW president's insistence on substantial contract improvements despite the competitive steel market. He felt that an overhaul of the insurance and pension programs was long overdue, and was particularly aware that the autoworkers' pension minimum of \$137.50 per month stood out like a sore thumb in relation to the old steel minimum of \$100.

Terms of the new contract will run for 2 years from July 1. The pension agreement is good for 3 years from Oct. 31, and the insurance agreement runs for 2 years from Oct. 31. Wages are reopenable within 1 year from May 1.



FORK TRUCKS: Repay Cost Quickly

Firm writes off 80 pct of investment in 1 year . . . Replaces narrow-gage rail system, manual handling . . . Mobile units all radio-equipped for efficient use.

Writing off 80 pct of a \$250,000 investment in a single year is a neat trick—one that was done by U. S. Metals Refining Co. on its materials handling equipment.

The quarter million was spent to modernize materials handling systems. Fork lift trucks are taking on more and more of the work previously handled by the Carteret, N. J., installation's narrow-gage rail system and by manual effort. Efficient use of the trucks is facilitated by two-way radios installed in all mobile equipment.

Cite Big Savings

Adding further assurance of optimum utility is the close liaison between materials handling personnel and the purchasing department. The firm insists that all incoming loads be prepared with a view to economical handling.

Examples of individual economies claimed for the modernized system:

Cost of unloading steel from highway trucks and hauling it to storage was cut from \$19 per ton to 50¢. At 2500 tons annually, the saving totals some \$35,000 a year. In this operation a side-loading fork truck replaces locomotive-type yard cranes and requires only one operator.

By insisting that lumber be shipped in flat cars rather than box cars, the firm now unloads lumber with fork trucks at a cost of \$44 per 25,000 board ft. Previous manual unloading cost \$110 per 25,000 board ft.

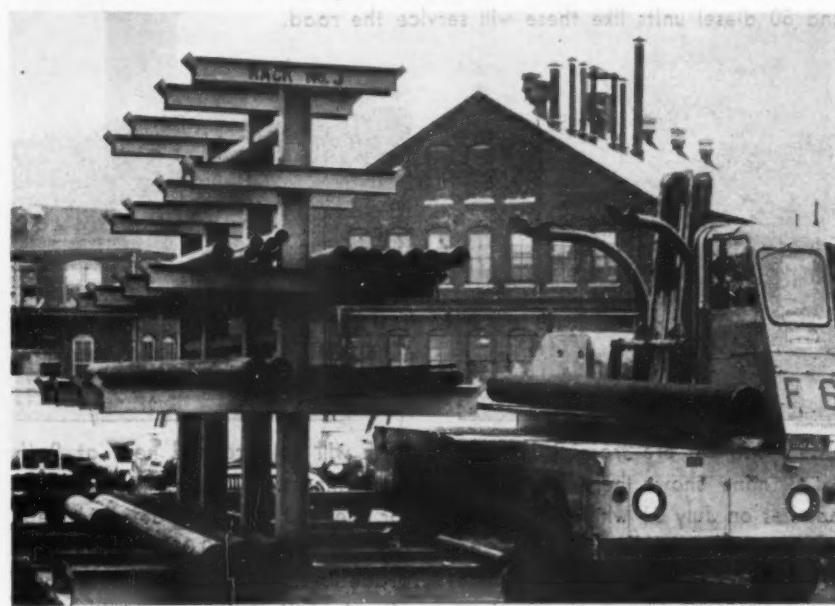
Plant uses a considerable quantity of $\frac{3}{4}$ -in. pipe which used to be supplied in small bundles for manual unloading by two men. Purchasing department now requires the supplier to ship in larger bundles for convenient unloading by the side-loading truck.

Result was a 50 pct cut in man-power needs for the job.

Fullest possible use of the fork trucks is assured by the two-way communications system. Deadheading is minimized.

Dispatcher, who handles about 900 two-way conversations daily, receives requests from department heads, assigns precedence and sends the nearest trucks. Supervisor's offices also have radios.

Maintenance costs are kept down, according to plant manager R. H. Graves, by "purposely specifying equipment which has a wide margin of capacity over the heaviest load it is likely to handle . . . and the savings we make in maintenance more than make up for the higher initial cost of heavier equipment."



"CHRISTMAS TREE" racks save space, facilitate handling; separate stock.



Story and photos by Iron Age Editor Tom Campbell

RUGGED COUNTRY like this plagued the builders of the railroad which runs from Sept Iles 360 miles to the north to Knob Lake in Upper Quebec. These rail headaches will become legendary in railroad history. Jack Little, manager of the road, is happy that things are coming along okay.

End of a Dream

Close to 600 million tons of high grade ore have been proven at Quebec-Labrador fields . . . potential is at least 1½ billion tons. Ore suspected in 1893 . . . discovered in 1929 . . . first development in 1936 . . . large-scale drilling and prospecting in 1946-48. American and Canadian interests formed Iron Ore Co. of Canada in 1949. Total cost of project will run about \$275 million.

(For earlier detailed story on Quebec-Labrador ore see THE IRON AGE, Jan. 8, 1953, p. 35.)

Quebec-Labrador Iron Ore Shipments to Start in Three Weeks



SUPPLY TRAINS have been running up the line month on end with needed equipment, men and food. A few weeks ago this one delivered an important shipment—a ballast tamper and a big Marion shovel. Between 48 and 50 diesel units like these will service the road.



HIGH GRADE ore from Ruth Lake No. 3 mine shown here will reach Sept Iles on July 31 when VIP's from Canada and the U. S. celebrate the first official ore shipment. This mine runs high in manganese, and iron content is close to 60 pct.



ORE will be screened here at Ruth Lake mine and loaded into ore cars for the 360 mile trip down to Sept Iles. More than 100,000 tons of lower grade ore has been shipped down ahead of time to form a base for ore stockpiles at Sept Iles.

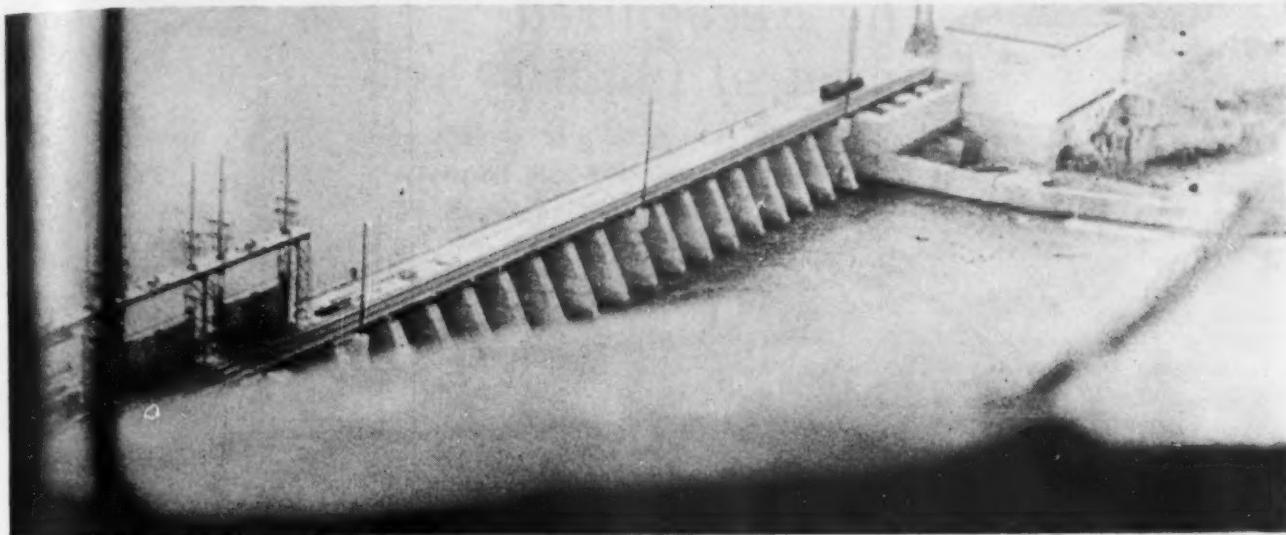
After more than 3 years of headaches and heartaches the great Quebec-Labrador iron ore development is about completed. High grade ore is being readied this month at Ruth Lake Mine No. 3 for shipment to Sept Iles, the big terminal and port on the north shore of the St. Lawrence, 360 miles south of the ore fields.

American and Canadian governmental and industrial bigwigs will greet the first official trainload of ore on July 31.

This railroad engineering marvel, nurtured by Jack Little, ex-bushman who always dreamed of running a railroad, is a testimonial to David A. Livingston. Ten years ago that venerable civil engineer started a 4-year job of charting the road through land never before traveled by white men. The completed road has confirmed the accuracy of his original survey.

The road is also proof that people like Jules Timmins, Hollinger-Hanna head; Bill Durrell, general manager of the project and George Humphrey (who before becoming Secretary of the U. S. Treasury was chief "needler" on the job) can dream dreams and make them come true.

C. E. (Mac) McManus, project manager who covers the development 24 hours a day, will tell you



POWER for the mines in Quebec and Labrador, the townsite Schefferville and the upper part of the railroad system will come from a power plant at Menihek Dam

shown here in an aerial view. The dam also serves as a bridge for the railroad and is located 331 miles north of Sept Iles.

that the biggest single ingredient which has made this far-north undertaking a success is cooperation between men on the job who came from every part of Canada and the U. S.

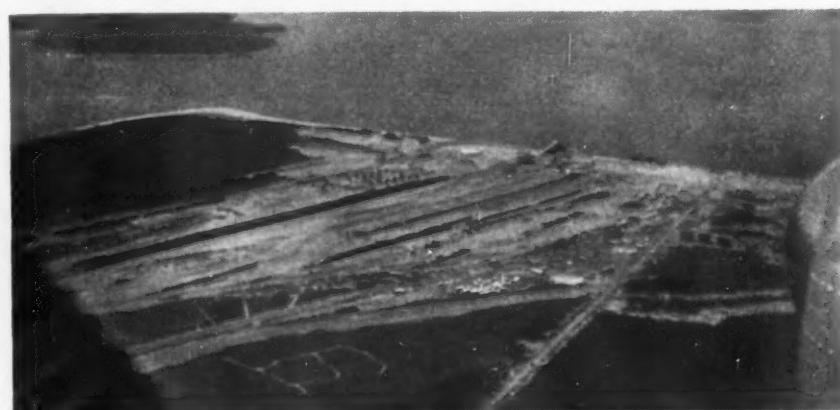
Now that the job will soon become routine to these men it could become a little boring. But the excitement of building Schefferville (named after the Bishop of Labrador and located 360 miles north of Sept Iles) plus the homes, the wife and the kids and the fishing may start a completely new and exciting chapter for most of the men.

The ore runs 57 to 60 pct iron and is high in manganese. Dick Geren, mine boss, expects to ship down 1½ million tons of ore this season and may hit 5 million tons next year with 10 million tons slated for the 1956 season. Eventual goal is 20 million tons.

Makeup of Iron Ore Co. of Canada is: Republic Steel Corp., Wheeling Steel Corp., National Steel Corp., Youngstown Sheet & Tube Co., Armco Steel Corp., Hanna Coal & Iron Corp., Hollinger Consolidated Gold Mines, Labrador Mining & Exploration Co. and Quebec North Shore Exploration Co. Bethlehem Steel Co. has a contract with Hanna Co. for 30 million tons of ore over a period of 25 years.



THIS HUDDLE took place at Menihek Dam 331 miles north of Sept Iles a few weeks ago. Topic was "rush rush." Man with back to camera is "Mac" McManus, project manager. He is not known for sweet phrases. At the left looking—and listening—is Tom Campbell, Iron Age editor.



FUTURE DEFENSE of the Western Hemisphere will owe much to this big terminal at Sept Iles. Here are the dock, maintenance shops, loaders, stock-piles, fuel tanks, offices and conveyor systems. It is the jumping off place for shipping ore to the U. S. A. Season here will run 9 months a year.

The Recognized Symbol of Quality



The superior performance of Keystone "Special Processed" Wire on difficult cold heading jobs is recognized by licensed manufacturers of recessed head screws throughout the country.

The excellent flow properties of this wire assures uniform, strength-giving grain structure which "trademarks" high quality production. The structural soundness and uniformity of "Special Processed" wire is the result of careful selection of raw materials, our own exclusive drawing and heat treating process, rigid quality controls and inspections.

Keystone is doubling its production capacity on "Special Processed" Cold Heading Wire to keep pace with the ever increasing demand of old and new customers alike. Your inquiry is welcomed.

INDUSTRIAL WIRE SPECIALISTS

Keystone Steel & Wire Company

PEORIA 7, ILLINOIS



H. F. McCULLOUGH, general manager of GE's Service Shops Dept.

Maintenance:

Predict yearly cost to industry of \$22 billion by 1964.

Industrial maintenance expenditures will double in the next 10 years to about \$22 billion annually, H. F. McCullough, general manager of General Electric Co.'s Service Shops Dept., predicted in Cleveland last week.

Speaking at the first GE-sponsored Productive Maintenance Forum, Mr. McCullough said industry must direct to maintenance functions the same degree of management skill now devoted to production.

Today's stepped-up production combined with increased labor, materials and equipment costs dictate a scheduled maintenance program. With the trend towards automation in industry, the need for programmed maintenance has been emphasized even more strongly in certain areas. Some aircraft and automotive industries, for example, have already applied electronic computers to simplify maintenance programming.

The G-E program outlined at the forum covered five basic steps to aid industry:

- (1) Gather complete equipment data;
- (2) Evaluate routine maintenance so that cost of equipment will show how much care is warranted;
- (3) Establish a routine operating control system;
- (4) Evaluate critical maintenance needed; and
- (5) Establish a critical maintenance program.

SCRAP: Aim New Blast at Military

Say all possible scrap operations should be turned over to industry . . . Challenge validity of cost figures . . . List disposable equipment—By N. R. Regeimbal.

Another powerful voice joins the growing clamor for the military agencies to get out—and stay out—of the scrap processing business as a House committee issues a sharply critical report of government in competition with the "distressed" scrap industry.

Report of a special subcommittee under Rep. Cecil M. Harden, R., Ind., is the strongest yet issued in the controversy. It blasts the military scrap operations and openly challenges Defense Dept. testimony.

Scrap operations should be turned

over to private industry except where demilitarization is an important factor or if private dealers cannot be induced to undertake it, the report demands.

Last November the Defense Dept. operated 61 scrap processing plants, 15 of which produced no scrap, 6 less than 100 tons, and 34 less than 3000 tons in 1953. Seventeen of these were later discontinued after a committee-directed study. As a result, 15 presses and 8 shears are now available for disposition at these centers, the report says.

Subcommittee members took sharp issue with the recommendations of the Defense Dept. regarding the other 38 plants listed for continued operation.

Cost reports requested for 12 plants slated to remain open because they are profitable were challenged because "in no case is the tonnage identical with earlier reports . . . the cost of operations are incomplete in many cases and the estimated market value of unprocessed scrap unrealistic."

Committee found that in several cases, a service depot had computed government savings from scrap operations by calculating unprocessed scrap as worthless when it was actually selling for as much as \$30 a ton. Result was that the government actually lost money by processing its own scrap.

Turn Page

Ferrous Scrap Processed, Fiscal 1953

Installation	Presses	Shears	Scrap Processed (gross tons)	Installation	Presses	Shears	Scrap Processed (gross tons)				
Army:											
Tooele Ord Dep, Tooele, Utah	2		4,334	Naval Amm Dep, Mare Island, Cal.	2		798				
Benicia Arsenal, Benicia, Cal.	1		800	Naval Amm Dep, Hawthorne, Nev.	1	1	4,322				
Mount Rainier Ord Dep, Tacoma	1		280	Naval Supp Dep, Mechanicsburg, Pa.	1	1	3,903				
Sierra Ord Dep, Herlong, Cal.	1	1	1,191	Naval Amm Dep, McAlester, Okla.	2	1	225				
Ogden Arsenal, Ogden, Utah	1	1		Portsmouth Naval Shipyard, Portsmouth, N. H.		2	98				
Utah Gen Dep, Ogden, Utah	1	1	988	Naval Air Sta, San Diego, Cal.		1					
Umatilla Ord Dep, Umatilla, Ore.	1		951	Naval Air Sta, Corpus Christi, Tex.		1	2				
Navaho Ord Dep, Flagstaff, Ariz.	1		800	Naval Shipyd, Charleston, S. C.		1	2,135				
Black Hills Ord Dep, Igloo, S. Dak.	1		2,791	Marine Corps Recruit Dep, Parris Island, S. C.	1						
Pueblo Ord Dep, Pueblo, Colo.	1		850	Naval Shipyd, Long Beach, Cal.	1	2	1,369				
Jeffersonville Qm Dep, Jeffersonville, Ind.	1			Marine Corps Air Sta, Cherry Pt, N. C.	1	2	136				
Springfield Armory, Springfield, Mass.		1	5,743	Naval Amm Dep, Crane, Ind.	1	1	3,350				
Louisiana Ord Plant, Shreveport, La.	1			Naval Amm Dep, Hastings, Neb.	1		7,543				
Ravenna Arsenal, Apc, Ohio	1		403	Marine Corps Supp Annex, Barstow, Cal.	1		195				
Watervliet Arsenal, Watervliet, N. Y.	1		1,111	Marine Corps Supp Dep, Camp Pendleton, Cal.	1		999				
Aberdeen Proving Ground, Aberdeen, Md.		1	3,046	Naval Supp Dep, Newport, R. I.		1	1,732				
Rock Island Arsenal, Rock Island, Ill.		1	279	Naval Supp Dep, Clearfield, Utah		1					
Ft Belvoir, Ft Belvoir, Va.	1	1		Air Force:							
Atlanta Gen Dep, Atlanta, Ga.	1		2,363	Tinker AF Base, Oklahoma City	2		171				
Anniston Ord Dep, Anniston, Ala.	1	2	3,711	Kelly AF Base, San Antonio, Tex.	1						
Infantry Ctr, Ft Benning, Ga.	1		185	Hill AF Base, Ogden, Utah	1		40				
Augusta Arsenal, Augusta, Ga.	1		178	Wright-Patterson AF Base, Dayton	1						
Navy:											
Naval Sup Ctr, Norfolk	2		3,632	AMC, Wichita, Kan.		1	938				
Naval Shipyard, San Francisco	1		2,368	AMC, Chicago, Ill.		1	1,460				
Naval Sup Ctr, Oakland, Cal.	2		1,231	AMC, Marietta, Ga.		1	28				
Naval Air Station, Jacksonville, Fla.	2		620	AMC, Lynn, Mass.		1					
Norfolk Naval Shipyd, Portsmouth, Va.	2		6,907	Eglin AF Base, Crestview, Fla.		1					
Naval Magazine, Port Chicago, Cal.	1		79	Castle AF Base, Merced, Cal.		1	29				
				Total	43	39	75,543				

SITUATION UNDER CONTROL

BY KEOKUK

CHIEF KEOKUK:

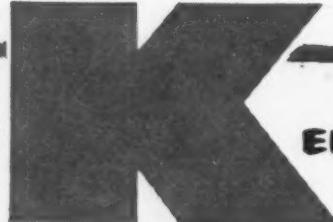
"Me no need teach Little Chief—him say modern generation learn make teepee on TV!"

PRINCESS WENATCHEE:

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KEOKUK



ELECTRO-METAL COMPANY

KEOKUK, IOWA

WENATCHEE DIVISION, WENATCHEE, WASHINGTON

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Government

"These reports," the committee criticized, "will not withstand critical analysis and their usefulness is doubtful."

Defense Dept., "apparently confused" over criteria for establishing scrap processing operations, purchased eight pieces of machinery which were declared excess within a few months—some of which were never used.

Subcommittee scored the military for procuring processing equipment costing from \$5000 to \$25,000 per unit "without standards, cost information, or a pre-evaluation of the necessity therefor." It called for another complete review of the scrap program by Aug. 8, and predicted that most of the scrap plants "cannot be justified."

Army, Navy and Air Force salvage and scrap programs have a tentatively approved \$40 million fund. But the military has been directed to discontinue scrap operations until the study has been completed. Despite protests from the scrap trade, General Accounting Office has ruled that services' scrap operations are not illegal.

Financial

Steel:

USS to sell \$300 million of debentures for capital.

United States Steel Corp. last week revealed plans to sell \$300 million in serial debentures to bolster its working capital. Maturity would be 1 to 10 years.

Board Chairman Benjamin Fairless said that the company plans to offer \$225 million of the debentures to the public through a group of underwriters assembled by Morgan Stanley & Co. The remaining \$75 million will be reserved for offering to the United States Steel and Carnegie Pension Fund, established for USS employees.

A registration statement will be filed with SEC as soon as possible and the offering will be made at a convenient time thereafter. Proceeds of the issue will be used to restore in part working capital spent in recent expansion and modernizations.

Last March the corporation revealed its expenditures for new plant and equipment since 1945 had amounted to, by Dec. 31, 1953,

about \$2.2 billion. Company working capital as of last December was \$346,019,785 against \$631,460,241 in December 1946.

Issue Renegotiation Booklet

Thirty-five typical questions arising from renegotiation of federal contracts are answered in a new Renegotiation Board publication, "Staff Bulletin 13A." Questions and answers range from exemption of consignment sales to when records may be destroyed.

Postpone Steel Freight Hearings

Interstate Commerce Commission hearings on truck and rail common carrier and contract truck rates for iron and steel items conveyed in official and eastern territory will take place on Sept. 14.

Originally scheduled for July 6, hearings were moved to later date at request of some of the groups.

Principal issue is whether reduced rail rates for transporting iron and steel products are likely to cause a rate war among the carriers. New rail tariffs have been in effect since Mar. 26.

Equipment at Discontinued Plants

Installation	Equipment available for disposition		Age on June 30, 1953	Installation	Equipment available for disposition		Age on June 30, 1953
	Presses (balers)	Shears			Presses (balers)	Shears	
Army:							
Infantry Ctr, Ft Benning, Ga...	1	..	14½ mo	Navy:	1	..	2 yrs
Pueblo Ord Dep, Pueblo, Cal...	1	..	10 yrs	Naval Magazine, Port Chicago, Cal.	1	..	Shear, 12 yrs;
Jeffersonville Qm Dep, Jeffersonville, Ind.	1	..	New	Naval Air Sta, San Diego, Cal.	1	1	baler, 9 yrs
Benicia Arsenal, Benicia, Cal...	1	..	9 yrs	Naval Air Sta, Corpus Christi, Tex.	1	2	Shears, 11 yrs;
Mount Rainier Ord Dep, Tacoma	1	..	6 mo				baler, 10 yrs
Ogden Arsenal, Ogden, Utah...	1	1	Press, 10 yrs; shears, 6 yrs	Air Force:			
Utah Gen Dep, Ogden, Utah...	1	1	Press, 1 yr; shears, 10 yrs	Castle AF Base, Merced, Cal...	1	..	9 yrs
Umatilla Ord Dep, Umatilla, Ore.	1	..	1 yr	Eglin AF Base, Crestview, Fla...	..	1	9 mo
Ft Belvoir, Ft Belvoir, Va...	1	1	Shear, new; press, being processed	Hill AF Base, Ogden, Utah...	1	..	9 yrs
			6 yrs	Kelly AF Base, San Antonio, Tex.	1	..	10 yrs
Watervliet Arsenal, Watervliet, N. Y.	..	1		Total	15	8	

Note: Estimated average cost of presses, \$25,000; shears, \$5,000.

PICKLING ACID INHIBITOR



RODINE®

Photo by courtesy of United States Steel Corporation, Fairless Hills, Pa.

"Rodine" more than pays
for itself in savings of acid
and metal. More uniform
pickling and better pickled
surfaces are obtained when
"Rodine" is used in acid
pickling baths.

When sheet steel is pickled continuously, "Rodine" improves the surface and prevents "pickle burning" in prolonged pickling.



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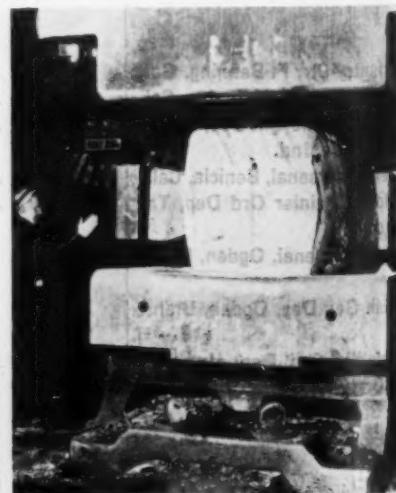
Steel press forges huge 24S ingots in experiments.

Proof of the pudding's quality was in a successful series of press forging tests recently completed by U. S. Steel for Kaiser Aluminum & Chemical Corp. Puddings were seven 5000-lb ingots of 24S aluminum alloy, developed for use in the Air Force heavy press program.

Experimental work was done on a 7000-ton hydraulic press at U. S. Steel's Homestead Works, Munhall, Pa. Need for larger presses was shown by necessity to change dies for the fifth of 13 forging steps. Change also made an intermediate reheat necessary.

The 32-in. diameter, 70-in. long ingots were cast by a modified direct chill method and heat treated to relieve casting stresses and homogenize the structure. Kaiser states that casting of ingots this size in 14S, 24S and 75S alloys is now "a matter of routine."

In the tests, the ingots were heated to 700°F in 30 hours and held at that temperature for 12 hours. First forging step reduced the ingots to barrel shapes 36-in. high. Right angle working in three more steps brought them to 30-in. cubes. Following the die change and reheat to 750°F, they were then worked down to 13 x 42 x 85-in. plate blooms. Actual press time per ingot was about 90 min.



CUBE results from fourth forging step on 7000-ton hydraulic press.

BARS: Cold-Finishers See Pickup

Expect summer dip, mild increase in fourth quarter... Year's total will be off 20 to 35 pct... Shipments through April off 45 pct... Pickup gradual—By K. W. Bennett.

In early 1953 many outside observers viewed declining order backlogs on cold-finished bars and predicted a substantial drop in production. The industry ignored them and drew a whopping 2,194,375 tons. The industry had predicted a 2-million-ton year (See THE IRON AGE, Apr. 23, 1953, p. 85) and got one.

But those who predicted the lower market may finally have rung the bell a year later, despite strengthening bar market in May and June.

Small Pickup Ahead

Despite a few new orders, fairly good sales in June and an unusual number of mill bookings for hot-rolled bars to be shipped to cold-finishers in July, the industry is regarding second half with limited enthusiasm.

Pegged historically to four markets, cold-finished bar suppliers don't find booming strength in any of them. Farm equipment, automotive, appliance and warehouse industries, in projecting second half requirements may top first half—but it won't be by any appreciable tonnage.

Automotive demand is expected to decline.

Farm equipment will begin to pick up in late September and October—but bar buying from that quarter is based on low operating inventories and won't offset the automotive dropoff.

Appliance buying may step up but the tonnage is too small to alter the overall picture significantly.

June Buying Up

Warehouses, despite periods of freshening business in early spring and again in June, do not anticipate heavy bar demand in the fall and find current stocks high for the amount of turnover. A fourth quarter seasonal pickup may ma-

terialize but, so far, only flat bars have shown any notable warehouse activity.

Cold-drawers pulled up their mill orders of hot-rolled bars in March and have generally held that level since. A cross-section of bar finishers indicates that April and May volume was about even for most after a slight decline in March. For most, June brought an upturn.

They now regard inventories of hot-rolled bars as good, if low. Their customers' inventories, with the exception of some warehouses, are equally low.

Ask Fast Delivery

Deliveries of cold-finished bars range 3-4 weeks, a top of 6 weeks on specialties. Spot orders have been delivered in 1 or 2 weeks, however. Alloy bar may offer a little difficulty, more because orders must be accumulated to reach a steel-heat tonnage, not because of strong demand.

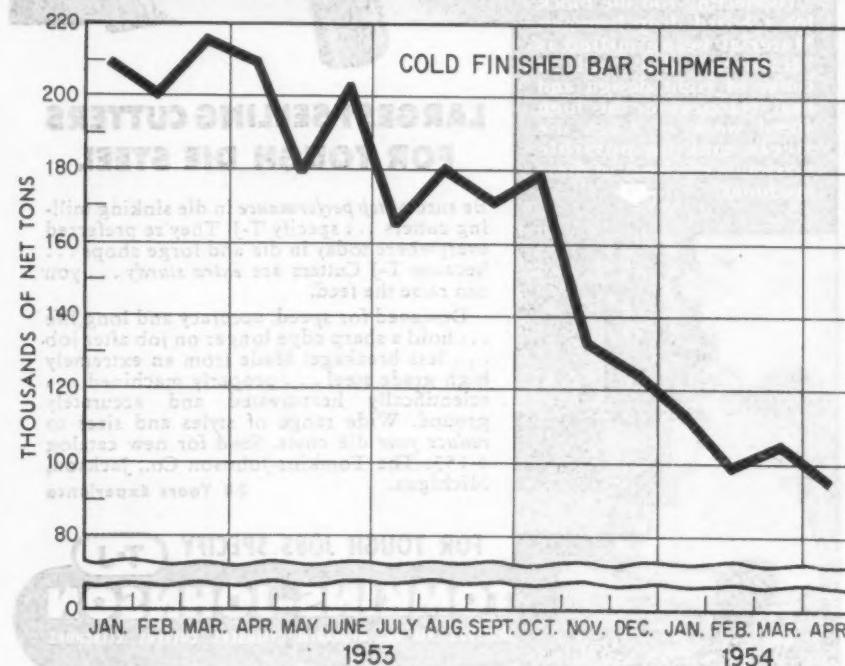
One cold-drawer had to contact four mills before finding one ready

to deliver alloy hot-rolled bar in a less-than-heat lot. There's considerable shopping, with the mill offering quickest delivery usually getting the order. Another indication that bar inventories are low.

There was virtually no scare buying in May and June, when a few steel grades reacted slightly to the possibility of a steel strike or trouble abroad. Similarly, when cancellations were rife in January of this year, among flat-rolled grades, there were few cancellations of hot-rolled bar mill orders.

Shell steel directives warded off the heavy inventories that plagued many steel grades in latter 1953. Orders are firm but for quick delivery. One drawer found that in April 71 pct of his deliveries were running at the 21-day mark, and were being scheduled by the customer for quick use. Warehouse purchasing has been notably low, falling as much as 30-50 pct in the past 7 months industry sources report.

Last year, cold-drawn bar deliveries began to fall immediately after the August post-vacation pickup, as shell cutbacks began. Yet first half 1953, plus accumulated backlog and shell directives, carried annual totals to a record peak. For instance, average monthly shipments in 1950 were 135,087



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Marketing

tons; in 1951 they were 161,318 tons; 1952 fell to 160,183 tons; and in 1953 zoomed to 182,866 tons.

Monthly average for the first 4 months of 1954 is a low 103,399 tons. With second-half 1954 looking as good as first-half but not much better, it's safely assumed that total sales, despite good business in June, will be well off from 1953. Estimates of the drop vary from 20 to 35 pct.

See Summer Slump

Average monthly shipments for the first 4 months of '54 were only 55 pct of the 1953 average. With a slow third quarter expected, and a fourth quarter at good levels but not exceeding second quarter, the yearly total should be well under '53, when shell production was high. Current shell planning indicates further military cutbacks.

Is it bad? Bar producers would, like most, like to see more business. They expect to see a drop in July and August when plant vacations cut bar consumption. On the other hand, the downslide of late 1953 has halted. Without a shell program, the pickup will be gradual. But, come fourth quarter, pickup there will be, the cold-finished bar producers believe.

TV Sales Hit New High

Retail sales of television receivers during the first 4 months of 1954 climbed to a new record for the period. Some 2.1 million sets were sold, 52,000 more than in the same period last year.

Sales in April, although dropping below the previous month, were also well above sales for the same month in any previous year. Sales of radios dropped slightly this year, although remaining above earlier years, the Radio-Electronics-Television Mfrs. Assn. reports.

Name Secrest to FTC Post

Rep. Robert T. Secrest, D., O., a former coal miner and educator, is nominated by President Eisenhower to be a member of the Federal Trade Commission. Commission this year consists of three Republicans and two Democrats.

ORE: Lakes Shipments Slow to Walk

**Lagging steel output, high stockpiles cut iron ore demand . . .
Monthly shipments average about 10 million tons, 25 to 30
pct under '53 . . . Hiring, shipbuilding dip—By R. M. Lorz.**

Lagging steel production has slowed Great Lakes ore hauling operations to a virtual walk. Operation slow-down has also caused some shrinkage of earlier estimates on total shipments for 1954.

Before the fleet got moving early this May some authorities predicted Lakes vessels would unload somewhere between 80 and 90 million tons at Lower Lake ports this year. Now it appears THE IRON AGE estimate of 70 million tons (Apr. 22) should be very close to the mark. Optimists who aimed too high at the beginning of the season apparently failed to reckon with two important factors:

1. National ingot rate which has consistently failed to measure up to the 85 pct so often mentioned at the end of the year;
2. Huge ore stockpiles which left storage bins crammed when the hauling season ended last year.

Stocks Limit Shipments

Overall effect of tapering steel production and a mountainous supply of ore is reflected in a contracting statistical picture. Larger steel companies generally say their ore needs this year will run from 25 to 30 pct below last year's record level. According to monthly tonnage reports issued by Lake Superior Iron Ore Assn. reduced requirements have resulted in monthly shipments averaging about 10 million tons.

By June 28 cumulative shipments reached 21,065,472 tons, compared with a total haul of 34,913,247 tons for a similar period last year. Lower operating rates have also affected consumption and existing stockpiles. By June last year mills had consumed 40,068,340 tons of ore. On that same date this year only 29,376,625 tons had been dumped into blast furnaces. And despite this year's late start total stocks on hand were pegged at 29,562,503 tons, over 3 million tons more than the 1953 figure on the same date.

Fleet operations on the Lakes this year for vessels handling all types of cargo are running at about 80 pct. That means only an estimated 215 vessels are plying Lakes routes this year. All water shipments in '53 required the allout service of some 286 vessels. Ships which haven't been switched over to grain, coal or limestone have either been scrapped or made into barges.

Trip time has also been affected by the sharp decline in delivery pressure. Turnaround time is noticeably longer and many vessels are following the triangle route by taking coal to Chicago, then proceeding toward the locks for ore loads. Last year a healthy percentage of this coal was shipped by rail. But filling in the vacuum with loads of coal and ore is no easy trick since there just isn't enough tonnage to go around.

Hiring, Shipbuilding Dip

Sharp-eyed transport officials, conscious of costs as competition gets more rugged, have generally lengthened trip time also by ruling for reduced speeds to cut down on maintenance costs. While there are fewer qualified sailors in demand this year the employment drop on the Lakes has not been sizeable. Carrier officials say this season is actually the first in the past 4 years when they haven't had to scrape the bottom of the barrel for manpower.

Summer lull has also hit Lakes shipbuilding hard. At present there is only one vessel under construction and no new contracts have been signed since the season started. However, Canadian owners have launched four new vessels now engaged in carrying grain.

Lakes shippers generally view the current slump with unruffled calm. Their earnings will, of course, be down but allowances for faster tax writeoffs and excess profits relief should serve to cushion the financial blow.

Drawings:

Conveyor speeds blue-print handling at Pratt & Whitney.

A conveyor installed in Pratt & Whitney Aircraft's production engineering department to save time in delivering blueprints has proved its worth after a full year of operation at the company's East Hartford plant.

The production engineering department's tool and part print conveyor, linking the department on the second story of the engineering building to the file room on ground level, just off the plant floor, marked its first birthday last week.

Installed during expansion of the department, the conveyor and file room replaced file cabinets occupying space in production engineering so that additional personnel could be moved from the plant proper to the department area.

More than 15,000 requests for prints, tracings and operation sheets from production engineering personnel to file room workers are handled by the conveyor each month. Eighty pct of the requested material is returned via conveyor for refileing.

Operating continually during the first shift, the conveyor can be halted by control switches at either end. An 0.5-hp engine powers the 21 conveyor trays that take 3 minutes to complete a cycle.



CONVEYOR saves time in delivering blueprints. It makes 15000 deliveries a month. About 80 pct return for re-filing same way.

INDUSTRY: Outline Mop-Up Plans

Washington officials fear industrial complacency . . . Say dispersal, positive action plans are needed by most firms . . . Basis is good business—By N. R. Regeimbal.

American industry, dispersed where possible, prepared to recover quickly after an attack, would be one of the best deterrents with which this country could bulwark itself against attack. Military planners say that the next war—an atomic conflict where we are attacked and swiftly retaliate—will be won by the power which can speedily, efficiently mop up after the first blow and put its industrial might back into operation.

Protection Good Business

Only a slim handful of this country's plants thus far are dispersed, say officials who fear industrial complacency. Still fewer of the others have made any concrete plans to get back into production after an attack. Two, Koppers Co. of Pittsburgh, and American Machine & Foundry Co. of New York, have formulated plans, distributed them to all employees.

Basis for their planning is simply good business—protect corporate pocketbooks, reassure stockholders that investments will not easily be wiped out.

Burden of tailoring a defense plan has been placed on each individual company by the U. S. Commerce Dept. Government will help, but officials are convinced that a thousand company plans are better than a single master plan.

How They Plan

Koppers and AMF set up their plans along these lines:

Stockpile critical or hard-to-replace materials near most secure plants; microfilm company records and specifications, tuck them away in a safety vault to prevent "corporate amnesia"; set up alternate chains of command and a secret alternate headquarters within walking distance of the main offices in case transportation is disrupted; set up a cash reserve on which to

operate until normal banking operations are restored; practice emergency shutdowns that take about 10 minutes; plan to evacuate most employees; set up a program to repair bombed machinery.

AMF has assigned operating teams from each plant to learn about another plant, be prepared to step in and take it over after attack. Both companies have arranged "interplant assistance" programs whereby more remote plants are prepared to help clean up a damaged plant and provide a minimum amount of production for the knocked-out facility.

The companies are not constructing expensive bomb shelters nor stockpiling amounts of medical supplies, believing the expense cannot be justified to stockholders.

Basis of the plans is self-sufficiency. Thinking is that civil facilities, fire, rescue teams, will be too tied up to be of much help. Plans also operate on the theory that they are most effective if built around existing safety and fire precautions.

Preparations are also being made to prevent sabotage or es-

pionage at a damaged plant after a hit. Specially-trained teams of workers will be stationed at each door, gate and hole in the fence, to prevent unauthorized persons from entering or leaving after an attack.

Although these two company plans are tailored to multi-plant operations, most of their theories are applicable to single-plant firms. The smaller company, it is suggested, should establish "mutual aid" agreements with other small plants in the same city.

Commerce Dept., admittedly lagging behind in its defense preparations because of lack of funds, is using the Koppers and AMF plans to spur other firms. Both plans are printed and available from the two companies.

Contracts Reported Last Week

Including description, quantity, dollar values, contractor and address. Italics indicate small business representatives.

Simulators, 2115, 227000, \$308,059, Monarch Mfg. Co., Fort Worth, Texas. Metal parts, assembly for shot TP-t, 76, 99175, \$383,512, Alrtex Products, Inc., Fairfield, Ill.

Model 120 Winch assembly 96, \$125,782, Tulsa Winch Mfg. Co., Tulsa, Okla. Motor generators, 1500, \$747,780, Red Bank Div., Bendix Aviation Corp., Eatontown, N. J.

Wheel assy main-landing, 578, \$100,316, The Goodyear Tire & Rubber Co. Inc., Akron, Ohio.

Test set: electron tube, 0402 ea, \$59.035, Sylvania Electric Prods., Inc., Buffalo, N. Y. H. H. Martin.

Electron tube type 12ATTWA, 125000, \$293,750, General Electric Co., Schenectady, N. Y. W. H. Bobear.



NEW HAVEN R.R. President Patrick B. McGinnis examines lightweight Talgo train with which he hopes to speed rail travel.

REPORT TO MANAGEMENT..

Steel pact means this:

Settlement of steel industry negotiations last week means we're in for a limited round of price-wage increases. Watch for these developments:

Cost of the steel wage-pension-insurance package to steel users alone will amount to around \$115 million over the next 6 months. Total cost to public may eventually be many times this figure.

Won't boom competition

But don't expect higher steel prices to boom demand for competing materials. Prices of some (such as aluminum) will rise after completion of labor contract settlements that will follow the steel agreement pattern. More important: unit cost of finished steel products won't be upped sharply. For automakers increased cost of incoming steel will be around \$7 to \$8 per car.

Heaviest impact of the price hike will be on construction industry which this year edged out automotive as the major steel consumer.

Who gained most

Benefit of peaceful steel settlement may have been greatest for zinc producers. With zinc stocks already at a mountain-high 200,000-ton-plus level, zinc producers would have been severely jarred if a lengthy steel strike had forced galvanizers out of the market.

Cost conscious steel buyers will do everything they can to cut corners on steel purchases. But don't expect much of a change in buying patterns. Most firms are already doing just about everything they can to keep their purchasing costs as low as possible.

Adds to buying power

The 5¢ per hour wage increase for steelworkers will increase purchasing power of this group around \$48 million per year, less taxes. Combined with wage increases in other industries that will be along the lines of the steel settlement, this can't miss perking up the economy.

You can figure steel industry profits for second-half '54 will top January-June total. Reason: Steel business will be better; companies have raised prices enough to cover the direct wage cost increase.

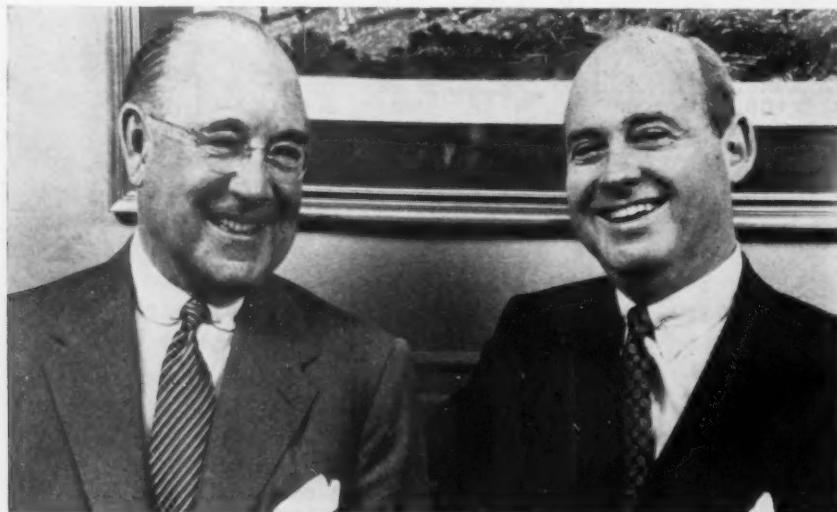
Watch auto industry

Along with a strong drive for a guaranteed annual wage, you can expect Walter Reuther's autoworkers to make an even more determined bid for a pension increase during contract negotiations next year. Terms of the steel settlement boosted steelworkers' pensions to \$140 a month, topping autoworkers' current \$137.50. You can bet Reuther won't take a back seat to McDonald without a real battle.

Industrial Briefs

American in Holland . . . A bronze plaque of Carle C. Conway, chairman of the executive committee of Continental Can Co., was unveiled recently in Deventer, Holland, at the new research laboratory of Thomassen & Drijver.

Now Operating . . . Rockwell Mfg. Co.'s new 116,000 sq ft completely air conditioned manufacturing plant at Sulphur Springs, Tex., has started production operations.



MERGING COMPANY heads John M. Olin (l.), president of Olin Industries, Inc., and Thomas S. Nichols, president and chairman of Mathieson Chemical Corp., at stockholders' meeting which approved merger of the two firms. New company will be Olin Mathieson Chemical Corp., with Mr. Olin as chairman and Mr. Nichols as president. John W. Hanes (not shown), financial vice-president of Olin Industries, will become chairman of Olin Mathieson's finance committee.

Change of Address . . . Kaiser Aluminum & Chemical Sales, Inc., has changed the address of its Cincinnati district sales office from 411 Union Central Life Bldg. to 2330 Victory Parkway.

Expanded . . . Continental Can Co.'s Houston plant has completed expansion and modernization of a new warehouse with storage space for more than 17 million tin cans.

New Home . . . Luria Engineering Co. has moved its main offices from 500 Fifth Ave. to 511 Fifth Ave., New York City.

"Going Fishing" . . . The Yale & Towne Mfg. Co., Yale Materials Handling Div., Philadelphia, will be closed for 2 weeks beginning Aug. 2. Full operation will be resumed on Monday, Aug. 16.

Distributor . . . Jones & Lamson Machine Tool Co., Springfield, Vt., has appointed Rickert Industrial Supply Co., Milwaukee, as a stocking distributor of its automatic opening die heads, chasers and other equipment.

Prexy Elected . . . Alloy Casting Institute elected C. K. Lockwood, vice-president, Stainless Steel & Alloys Div., Shawinigan Chemicals Ltd., Montreal, president at its annual meeting in Hot Springs, Va. recently.

Appointed . . . Electric Controller & Mfg. Co. has appointed Charles D. McCord & Son Engineering Sales, Lentz Rd., Largo, Fla., as a representative to handle sales of lifting magnets and motor starting and controlling equipment in Florida.

Dividend . . . Pressed Steel Car Co., Inc., declared a dividend of 20¢ per share on common stock for the period from Apr. 1 to June 30.

Outstanding . . . Malleable Founders' Society presented John A. Wagner, president, Wagner Malleable Iron Co., Decatur, Ill., with its 1954 award for outstanding service to the malleable iron castings industry.

Film Available . . . Michigan Seamless Tube Co. has released a 16-mm full color motion picture with sound entitled, *To Serve The Nation Best*. The film depicts the production of cold-drawn seamless steel tubing.

Distributor . . . Hadco Engineering Co., Huntington Park, Calif., has been named West Coast distributor for Warner Electric Brake & Clutch Co., Beloit, Wis. The Hadco organization will handle both sales and service of Warner electric brakes for coach trailers.

Authorized . . . Industrial Tool & Supply Co., San Jose, Calif., has been named a distributor for Carbolyoy Dept. of General Electric Co., Detroit. The organization will carry the department's entire line of standard cemented carbide tools and blanks, carbide-tipped masonry drills and diamond wheel dressers.

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ALAN WOOD STEEL COMPANY

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The Automotive Assembly Line

Set December Diecast Engine Debut

Huge new diecasting machine aimed at producing aluminum engine blocks . . . Biggest roadblock is investment in existing foundry and machining facilities—By R. D. Raddant.

The auto industry will get its first look at a diecast aluminum engine block late this year. It would be premature to predict that it will be embraced immediately by the automakers, but it will probably provide the basis for the first real consideration of aluminum as engine material.

It isn't a completely new idea, of course. Several European cars have all aluminum engines. Most U. S. auto companies are constantly testing engines with blocks of brazed aluminum or permanent mold aluminum. Some even have aluminum heads available on special engines for the market.

Build Special Machine . . . But the new 72-in. diecasting machine disclosed last week at the Doehler-Jarvis Div. of National Lead Co., in Toledo is admittedly aimed at the automotive market with the aluminum block as its major goal.

The giant diecasting machine is the world's largest. It was developed jointly by Doehler-Jarvis and Kaiser Aluminum & Chemical Corp. The idea was conceived nearly 5 years ago and the machine itself took 2 years to construct.

The first aluminum block is scheduled to be diecast in December and will give the auto industry plenty to ponder. There isn't one auto company that isn't interested, although with varying shades of curiosity.

Still Uphill . . . Inroads of light metal diecastings into auto construction have been very significant in recent years, although considerable resistance had to be overcome and remains to be overcome.

As one diecasting authority put it: "The auto industry still will not pay a premium for light weight. We have to show them savings in cost as well."

But improved diecasting has overcome cost barriers as well as showing tremendous weight advantages. Because much less waste is involved, diecasters now point to a 4 to 1 weight advantage for aluminum over gray iron where 2½ to 1 has been the accepted rule.

Light Metal Progress . . . Aluminum diecastings made their first major progress in non-trim adaptations in housings of torque converters in automatic transmissions. In 1955 it is expected that housings of every automatic transmission will be of diecast aluminum. Only the transmission case has resisted aluminum and remains, for the time being at least, of gray iron.

Many other parts of trim and moldings are diecast. In fact, 45 pct of Doehler-Jarvis's diecasting business is automotive. Small parts with long runs are particularly adaptable to diecasting. The die for a casting is ¼ to 1/5 of the cost of a die for a cold-rolled or stainless steel stamping.

Going back to the aluminum engine, the auto industry has long been interested in aluminum as

Why It's Crowded

If you wonder why it's hard to find a parking space or why Sunday driving finds traffic arteries crowded, here are some figures that explain it graphically.

In 1953, there were 56,313,281 motor vehicles registered in the United States. This represents an increase of 5.7 pct from 1952, but, much more significantly an increase of 81 pct from the end of World War II.

Of the total, 46,460,094 were passenger cars and 9,853,183 trucks and buses. Together they rolled up a total of 540 billion miles and consumed more than 42 billion gallons of gas.

block and head material. Even the previously noted resistance might break down as cars get heavier and heavier and the necessity for cutting weight becomes more vital.

Tried Other Methods . . . Brazed aluminum blocks of the "sandwich" type have been tried, but these have obvious drawbacks. Assembly of the layers is costly and brazing requires such heat that distortion results from the process. Permanent mold costs are excessive for serious consideration.

No doubt a lot of problems remain before a diecast block will reach the point where its advocates will be able to show concrete advantages, but Doehler-Jarvis officials exude confidence.

A. F. Bauer, chief engineer, points to the development of the large diecasting machine as a reversal of thought in the diecasting business. "Previously we always thought it was up to the auto industry to split up its parts to sizes that would fit our machines," he said. "Now it is up to the industry to provide the parts to fill the machine."

Biggest Roadblock . . . But there is one barrier that should cool excessive enthusiasm regardless of the logic behind some of the advantages.

Turn Page



"We had words, all right, but I didn't have a chance to use mine."

That is the tremendous investment auto companies already have in foundry and engine machining facilities. Obviously, it will take sensational progress to warrant their scrapping and replacement with die-casting and aluminum machining equipment.

Nevertheless, the large diecasting concept has many possibilities without even considering the engine. It bears watching for many large parts that previously were made of several stampings joined together. The engine is the ultimate goal—but there are many intermediate goals that are significant in themselves.

Set Speed Record . . . A hopped-up Chrysler V-8 engine producing 447 hp pushed a special racing car to a new closed track speed record of 182.554 mph on the Chrysler Engineering proving ground test track.

The new mark was established last week only 2 weeks after Jack McGrath, third place winner of this year's Indianapolis race, posted 179.386 mph in a proving ground dedication feature.

According to official Chrysler release, "The record-setting engine, designed and built by Chrysler Corp. Engineering Div. underwent numerous modifications in the buildup from stock 235 hp to the record breaking 447 hp."

Burns Alcohol . . . In the racing version, fuel injection takes over for conventional carburetion. Straight methanol is burned instead of gasoline. Other changes included a high lift racing camshaft with roller follower tappets in place of hydraulic lifters, domed pistons to increase compression ratio from 7.5:1 to 13:1, and magneto ignition.

The car was driven by Sam Hanks, 1953 AAA national champion. The engine was fitted to a Kurtis-Kraft chassis.

"The record itself is but one aspect of our engineering explorations to find the potential of this most modern of all production car engine designs," challenged James C. Zeder, vice-president and director of engineering. "No other American passenger car piston type engine has such a potential."

Tubeless Tires:

Packard is first to make them standard equipment.

Packard will make tubeless tires standard equipment on all models, effective immediately.

This independent, now awaiting stockholder approval of a corporate union with Studebaker, is the first automaker to make tubeless tires standard equipment.

Tubeless tires have been available on the replacement market at a higher price since 1949. As a reverse twist, Packard will make conventional tires optional at no price differential.

Tires of tubeless variety have been gaining in acceptance for some time and may make further inroads as regular equipment on other high price cars in 1955.

Makers list advantages of greater safety, longer road life, better ride, greater heat dissipation, and no tube friction.

Packard pointed out that recent automatic machinery developments have made tubeless tires adaptable

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
July 3, 1954...	116,117*	20,591*
June 26, 1954...	119,215	21,218
July 4, 1953...	123,048	17,676
June 27, 1953...	152,917	20,785

*Estimated. Source: Ward's Reports

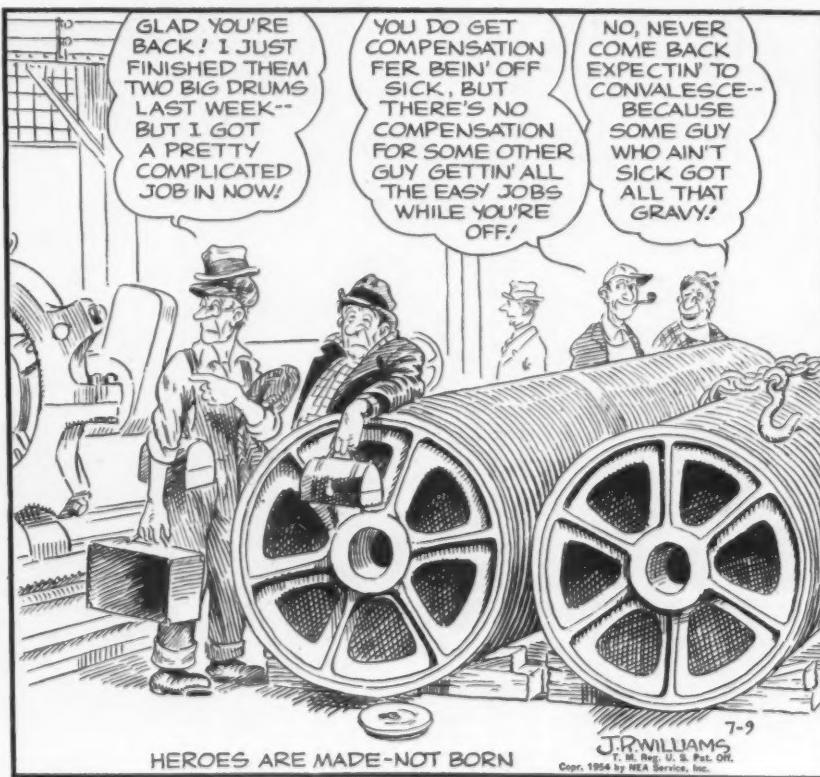
to economical mounting on Packard assembly lines. A service training program on tubeless tires has been completed with field service personnel at Packard dealers. The rim is the same as that used for conventional tires, but a tubeless tire can be repaired while still on the rim.

Ford May Get Proving Ground

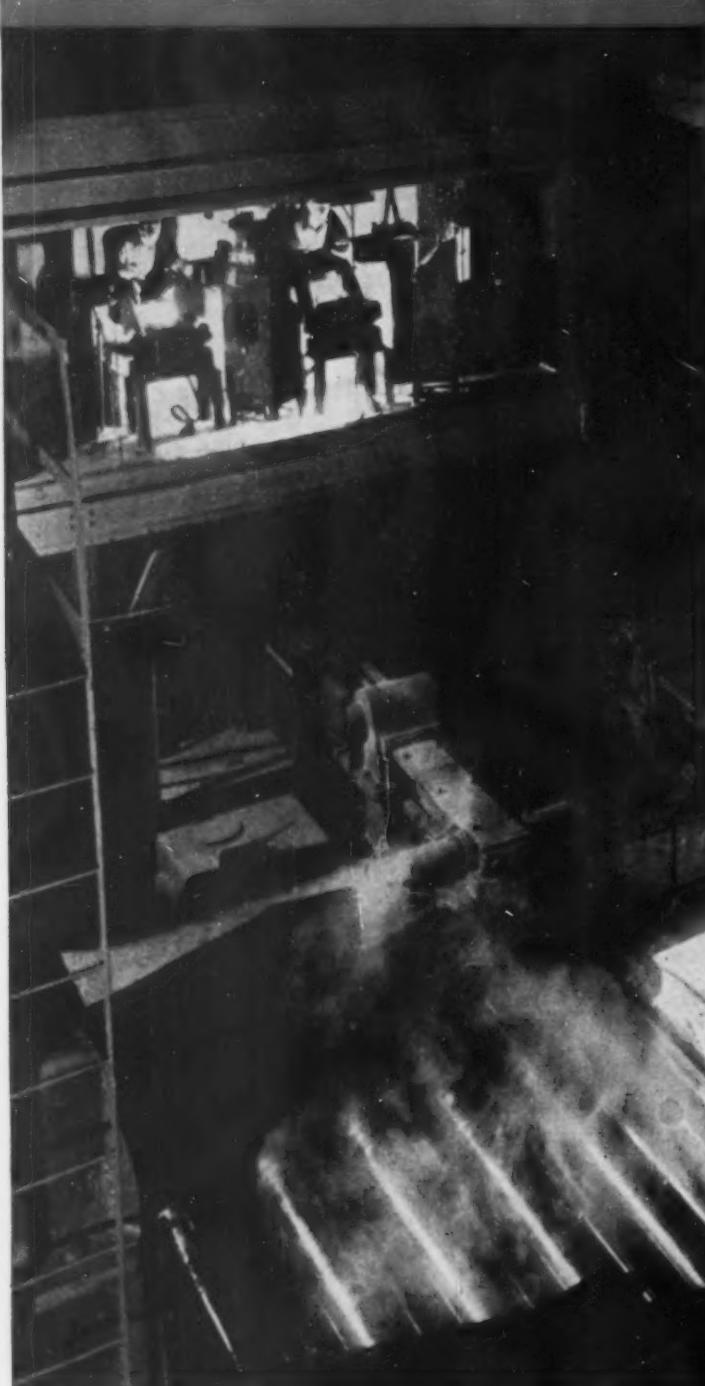
On the proving ground subject, a mysterious land purchase at Romeo, Mich., north of Detroit, has prompted speculation that Ford is acquiring a site for a new proving ground of its own. If so, it will replace the compact but over-crowded test track and grounds at Dearborn.

THE BULL OF THE WOODS

By J. R. Williams



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TEXACO Lubricants, Fuels and
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This Week in Washington

Cut Vance Plan Funds to \$100 Million

Compromise Senate "Okay" and House "Nix" by chopping 60 pct of reserve tool fund . . . None of \$250 million had been spent . . . Want complete inventory—By G. H. Baker.

Pentagon buying of reserve tools and machinery, scheduled to get underway late this year, will operate under a much more limited budget than originally planned.

Defense Dept. plant mobilization officials had asked Congress to grant a 1-year extension of the \$250 million tool-buying authorization which has been available each year for the past 2 fiscal years. But economy-minded members of both parties trimmed the authorized sum to \$100 million—a compromise between the full \$250 million okayed by the Senate and the earlier refusal of the House to vote anything for this purpose.

None of the \$250 million available to the Pentagon during the past 2 fiscal years was spent. The planners took the view that they would be guilty of reckless action if they placed orders for new tools until they had completed an inventory of what's already on hand. The inventory is now pretty well along, and if no further hitches develop should be completed late this year or early in 1955.

Defense Costs Up . . . The bigger labor bills to be footed by steel companies will be reflected in higher defense costs. Since nearly all of the weapons of war bought by the Army, Navy, and Air Force are sensitive to the price of steel, the increase won last week by the United Steel Workers (CIO) clearly points to a bigger defense budget.

Total sum voted by Congress for spending by the Army, Navy, and Air Force in the new fiscal year (1955) that begins this week finally turned out to be exactly \$28,800,125,486. Result: Cost of defense is to rise further.

Look for Defense Secretary Wil-

son to go to the White House in the week ahead with a request that the President ask Congress to vote a supplemental military fund calculated to offset the higher prices that Uncle Sam will have to pay.

Soft Coal Medicine . . . Bargain railroad rates on soft coal, a campaign to educate the public on the advantages of soft coal as a household fuel, and sky-high curbs on imports of oil and gas are the main points in a brand new industry-government program to perk up the ailing bituminous coal industry.

Coal operators are telling the government the soft coal industry has taken a terrific wallop at the hands of oil and gas competition. But they have abundant confidence in the future of their industry. They see no parallel in their industry and the on-the-ropes anthracite industry of eastern Pennsylvania.

Soft coal consumption is down about 30 pct from a few years ago—a sickening drop for any industry but one from which soft coal leaders as well as miners are confident they can regain by dint of new sweat and new planning.

The campaign for new cus-

'Fife' that Contract!

Washington—world's largest producer of gobbledegook—reaches the pinnacle of obscurity by adding a new word to the dictionary of meaninglessness: "Fife."

The new term is a second generation of Washington's preoccupation with opaqueness, being a contraction of three older gobbledegook terms, "firm-up," "finalize," and "expedite."

tomers, to be really effective, must be pushed by all hands—all the way from the board room to the pneumatic drill.

See Export Boost . . . Export of U. S. industrial goods of all types stands a good chance of being boosted by at least \$500 million annually. A White House-backed proposal to boost Export-Import Bank lending authority by this amount is now being studied by congressional committees. Approval of the plan is indicated.

Such a rise in the bank's lending authority would be a tremendous stimulant to the U. S. export market, and particularly that portion of the market dealing with South American countries. The Export-Import Bank's business is to make loans to foreign countries so that they may finance their imports of U. S. goods of all descriptions.

Study Government Businesses . . . Thorough review of 18 activities of a commercial or industrial nature under armed forces control is being undertaken by the military departments on fresh orders from the Pentagon.

Thomas P. Pike, the Defense Dept. logistics chief, has called for this study as a second step in the program for weeding out military activities which duplicate or compete with civilian enterprises. Military officials have until about Nov. 29 to complete their analyses.

Some Reports Soon . . . Similar studies are now being made of 13 kinds of industrial-commercial operations run by the armed services. Reports on eight of these are to be ready for Mr. Pike by Aug. 8.

Facilities to be covered in the new review include the following types:

Chain manufacturing, acetylene manufacturing, automotive repair shops, caustic soda manufacturing, cement mixing plants, chlorine manufacturing, oxygen and nitro-

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Washington News

gen manufacturing, power plants, power line construction, argon manufacturing, and freon manufacturing.

Penalize Wage Law Violators

Contractors of federally-financed projects face a 3-year suspension from government contracts if they violate minimum wage laws. U. S. Labor Dept., as part of a "vigorous enforcement program" invoked the penalty against 16 contractors in the first 5 months of this year.

Operating on the theory that pay scales below the legal minimum could "destroy local wage standards in a very short time unless checked," Labor Dept.'s Wage Determination Div. has forced contractors to compensate craftsmen for "millions of dollars" of underpayments since 1950, says Cornelius R. Gray, chief attorney of the enforcement branch.

Under federal law, construction contractors on federally-financed projects are required to pay wages equal to prevailing community wages as determined by the Labor Dept.

NATO:

Commerce Dept. seeks bids on \$8 million European projects.

Time is ripe for American firms to bid for approximately \$8 million worth of military construction in France, Italy, The Netherlands, and Denmark.

U. S. Commerce Dept. says the work required includes building airfield and power facilities and construction of port installations important in North Atlantic Treaty Organization plans.

In France, three airfield maintenance aprons and three dispersal areas are to be built at Peronne. Other projects include a fuel storage installation at Colmar and strengthening of shoulders at Marville airfield. Estimated cost of this work is almost \$2.5 million.

In Italy, at a cost of more than \$1.9 million, underground shops and an underground power station are called for at La Spezia and a heat-

ing plant and pipeline for underground petroleum storage at Cagliari.

The Netherlands project covers miscellaneous work at eight airfields, to cost about \$500,000.

Construction of a breakwater, key walls, and shelters is to be undertaken at Frederickshaven, Den. Estimated cost of this work is \$3 million.

Unions:

Can't bargain and compete at same time, NLRB rules.

Labor unions must make up their minds whether they are going to operate as competing businessmen or as legitimate bargaining agents for workers in industry and commerce.

They can't be both while retaining their bargaining rights, National Labor Relations Board points out.

In a recent unanimous decision, NLRB ruled that an employer does not have to bargain with a union which is competing directly with him. A union, says the board, "cannot perform its statutory functions as bargaining representatives if simultaneously it is an immediate business competitor" of the employer.

The decision involved a CIO Optical Workers local in St. Louis, which last year founded its own



"Part of an ad campaign showing strides made in transportation."

wholesale optical company as a means of providing jobs for unemployed union members.

Bausch & Lomb Optical Co., a manufacturer and wholesaler, then refused to bargain with the union on grounds that it was a competitor.

A charge of unfair labor practice was filed by the union against the company, but NLRB dismissed the charge.

Highways:

See big economy lift in \$875 million U. S. aid for roads.

Disclosure last week of the state-by-state apportionment of \$875 million in federal aid for highway building is going to give the economy an early lift.

That's the expectation of Commerce Secretary Sinclair Weeks, who provided the official word on the separate shares. By the end of September, he reasons, state officials will contract for \$100 million more in highway projects than they normally would.

This allocation of federal aid funds, which will amount to nearly \$2 billion in a 2-year period, was disclosed months before the announcement date of earlier years. It is the opening action in the new, expanded highway program made possible by the recently passed Highway Act of 1954.

Further stimulus to the highway construction industry will come from U. S. Bureau of Public Roads within the next 3 months. The Bureau will let contracts totaling \$2.5 million for public land highways and \$10 million for forest highways.

Companies supplying road-building equipment and materials for highway and bridge construction will, in the view of Secretary Weeks, derive considerable benefit from the broadened program, which he calls the "greatest surge in highway construction" in U. S. History.

Federal funds for primary, secondary, and urban roads and the interstate system amount to more than \$25 million in each of seven states.

STAINLESS STEEL INGOT PRODUCTION

TONS
(Thousands)

1100

1000

900

800

700

600

500

400

300

1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954

**Ohio Ferro-Alloys Assures
Stainless Steel Producers
Additional Supply of
LOW CARBON FERROCHROME
in Growth Years Ahead**

*Source: American Iron & Steel Institute

Since it was introduced in the 20's, production of stainless steel has more than doubled every decade. Industry leaders confidently predict this growth will continue despite temporary interruptions. There have been times in recent years when shortages of Low Carbon Ferrochrome severely hampered stainless production. To assure producers an adequate supply in the growth years ahead, Ohio Ferro-Alloys Corporation has added Low Carbon Ferrochrome to its line of quality ferro-alloys. Production schedules permit immediate shipment of these grades:

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Max. 0.06% carbon	Max. 0.20% carbon
Max. 0.10% carbon	Max. 0.50% carbon

— Other Ohio Ferro Products —

- FERRO - SILICON 25 - 50 - 65 - 75 - 85 - 90%
- SPECIAL BLOCKING 50% FERRO - SILICON
- SILICON METAL
- HIGH CARBON FERRO-CHROME
- LOW CARBON FERRO-CHROME SILICON
- FERRO - MANGANESE
- SILICO-MANGANESE
- BOROSIL
- SIMANAL
- RARE EARTH ALLOYS

- Briquets
- SILICON
- MANGANESE
- SILICO-MANGANESE
- CHROME



Ohio Ferro-Alloys Corporation
Canton, Ohio

Chicago Detroit Pittsburgh Tacoma Seattle
Minneapolis Birmingham San Francisco Los Angeles

West Coast Report

Wire, Plate Imports Mounting

Foreign tonnage up 32 pct over 1952 . . . German, Japanese mills booked months ahead . . . Undercut U.S. products by \$1-\$2 per 100 lb . . . Credit problems—By T. M. Rohan.

Western steel producers these days are having an increasingly tough time heading off customers from foreign import bargains.

Foreign tonnage coming into the West Coast, principally through Los Angeles, is mounting in wire products, tubular goods and plates, reversing a downward trend prevalent since the market eased.

Latest complete figures for 1953 indicated foreign imports on the Coast went up 32 pct over the previous year, hitting 121,535 tons, about 2 pct of all steel consumed in the 11 western states. About 75 pct of it came through in the last 4 to 5 months.

U. S. Meets Competition . . . Far from throwing in the towel or crying for tariffs, western steel producers are exerting heavy pressure to move their products even though cost is \$1-2 per 100 lb higher. In addition to traditional sales pitches on dependable local source of supply, foreign price fluctuations, quality, technical assistance, a few new ones are used for good measure.

Jobbers must stand the loss on foreign accounts in case of complaints. Another major point is that to take advantage of real price savings on imports domestic buyers must place letters of credit before the material is produced. This ties it up for long periods of time in some cases. Most importers however contend that regular credit policies prevail with established major customers and importers generally stand loss on returned merchandise.

Although supplies are all loose now, a year ago one desperate Los Angeles buyer contracted directly for 1000 tons of foreign wire at premium price deposited a letter

of credit and waited 6 months for delivery. In the meantime the local market collapsed, domestic deliveries became short term and prices eased.

Domestic Packing Superior . . . Packaging methods are an additional edge for domestic suppliers. Foreign nails for instance still come in wood kegs. Domestic producers use rectangular fibre containers which save 30 pct storage space—like milk cartons compared to bottles. The cartons are also easier to stack and don't roll on trucks.

So far this year, merchant wire imports through Los Angeles have increased. On nails, for example, imported tonnage into Los Angeles rose from 471 tons in January to 2322 tons in May.

Japanese Mills Boom . . . A Los Angeles importer, R. P. Oldham, told THE IRON AGE last week that German mills are booked through September for wire. Japanese mills are scheduled through August. He said German nails in Los Angeles are going for about 10 pct under domestic producers. Japanese had been 20 pct under but have lately gone into barter systems in which

West Coast Steel Imports

PRODUCT	1952	1953
Concrete ReBars . . .	7,583	1,032
Plates	10,558	20,301
Sheets & Plates N.E.S.	9,691	86
All Wire Products . . .	19,190	36,756
Wire & Strip . . .	2,635	5,494
Hoops & Bands . . .	677	2,509
Nails, Staples &		
Tacks	4,193	13,516

importers in the U. S. trade grain, cotton and other staples. Some finished Japanese wire products on these deals go for under the cost of domestic basic materials.

Plates and tubular goods are making the next heaviest inroads to wire products. Plate imports last year hit 20,301 tons, up 92 pct from a year ago. Other whopping increases of 271 pct on some smaller tonnage items were also hit.

About 64 pct of imported steel in the West comes in through Los Angeles with about 12 pct each for San Francisco, Portland and Seattle. Last year Los Angeles picked up 7 pct and San Francisco dropped 5 pct from the previous year.

Of 13,500 tons of nails, staples and tacks imported, 7700 came from Germany and 4000 from the United Kingdom. Of tubular products, 10,700 came from Japan, 9600 from Australia and 7000 from Germany. About 85 pct or 17,000 tons of imported plates originated in Japan.

Import Pig Iron . . . Besides steel products, pig iron imports are also on the rise. One importer said last week eastern consumers jumped the gun on the West as early as last November on orders for foreign pig. He said it currently is delivering into Los Angeles at about 12 pct under domestic prices. Sources include Rhodesia, Norway, Australia, India and Holland. Total West Coast foreign imports last year were 10,958 tons of pig, about 2 pct of nation's 541,907. Of the latter, 225,624 tons or about 50 pct were shipped from Canada into Michigan.

Open Extrusion Plant . . . The Pacific Northwest's first major aluminum extrusion plant went into operation last week when Aluminum Co. of America started up the first of two 2500-ton hydraulic presses at Vancouver, Wash.

Retooling prohibitive because capital's limited?

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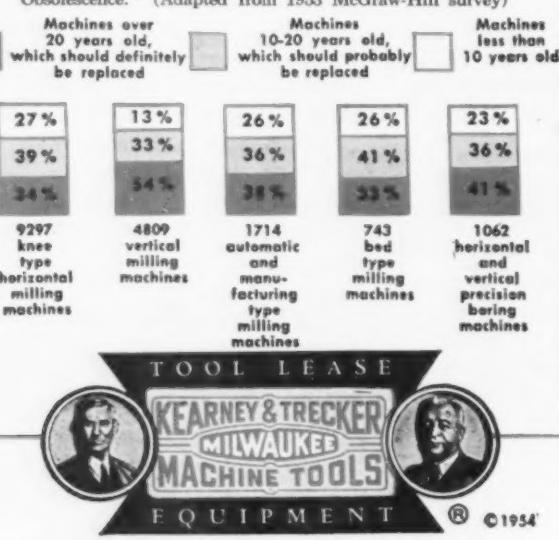
KEARNEY & TRECKER

LET'S LOOK AT THE OBSOLESCENCE PICTURE IN THE METALWORKING MACHINERY INDUSTRY



Here's the picture in a typical basic industry — MFG. OF METALWORKING MACHINERY — (see chart below). Of the 18462 standard knee type horizontal, vertical, bed and manufacturing type milling machines and precision boring machines in use today — which could be replaced by Tool-Lease equipment — 32% are 10-20 years old, 22% are more than 20 years old!

A similar detailed breakdown of 15 other basic industries is available in the booklet — "Critical Picture of Creeping Obsolescence." (Adapted from 1953 McGraw-Hill survey)



BY MODERNIZING WITH TOOL-LEASE YOU CAN ELIMINATE UNNECESSARY OVERHEAD

Kearney & Trecker's Tool-Lease Program offers operating management a quick way to stop the trend of rising costs, increasing competition and shrinking profit margins. With Tool-Lease, you can enjoy optimum flexibility to meet changing production requirements while avoiding the risk of high obsolescence. What's more, Tool-Lease enables you to keep your plant modern without tying up working capital.

TOOL-LEASE OFFERS A CHOICE OF PLANS TO MEET INDIVIDUAL NEEDS

Under Tool-Lease, you can rent any of over 250 standard Kearney & Trecker knee or bed type milling machines or precision boring machines. All are available under three basic plans, with varying options to continue or terminate the lease or to purchase the equipment. If you require special machinery or heavy-duty CSM bed types, special agreements will be considered.

GET ALL THE FACTS NOW

For complete information on Tool-Lease . . . help in analyzing your milling and/or precision boring needs — see your Kearney & Trecker representative or mail coupon to Kearney & Trecker Corp., 6784 W. National Ave., Milwaukee 14, Wisconsin.

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Please send me Bulletin TL-10A on Tool-Lease Program and booklet titled "Critical Picture of Creeping Obsolescence" or call Milwaukee, GReenfield 6-8300.



Name.....
Title.....
Company.....
Address.....
City..... Zone..... State.....

Machine Tool High Spots

Builders May Push New Sales Angle

Machine toolmakers may be forced to tool up a new machine to show potential customers how they actually work . . . Buyers want proof . . . Cut reserve funds—By E. J. Egan, Jr.

To revive lagging machine tool sales U. S. builders may have to make an expensive gamble. If the customary salesman's interview with a prospect isn't enough to make the sale, builders may be forced to go to the expense of tooling up a new machine to back up cost-cutting and production-gain claims.

It is apparent a new approach to the reluctant machine tool prospect is a must. Surveys indicate there are thousands of over-age, obsolete machine tools in American metalworking plants. Judged by present day productivity standards, much of this equipment is just limping along.

Buyers Wait . . . Certainly machine tool builders are turning out the last word in replacement machines, and they're ready, willing and able to make prompt delivery. Liberal terms and lease plans are offered as sales lures. But prospective buyers are still holding back.

One reason buyers may be hesitant about purchasing new machine tools is that they are being improved so rapidly and there are so many new models to choose from that the potential buyer is completely confused.

It's usually conceded to be good sales strategy for the salesman to put himself in the customer's shoes. Some gleanings from recent interviews with machine tool sales executives indicate a growing realization of the prospect's indecision in choosing the best equipment to replace his old machines.

They're Loaded . . . Today's metal cutting juggernauts are a far cry from the spindly-legged instruments of not so many years ago. They're loaded with electronics,

hydraulics, air cylinders and other devices to make them fast, dependable and accurate. For high production at low cost, American machine tools in general are admittedly the best in the world.

In any classification, they'll tackle a terrific variety of work, maybe even edge over into the range of work handled by another class of machine.

But the prospect, faced by claims and counter claims of the various machine types proposed to boost his production, wants to be sure. If talk won't convince him, he'll have to be shown.

Demonstration Rooms . . . Some machine tool builders have set up demonstration rooms or designated plant areas to be used for actual demonstrations of their latest equipment. Presumably more builders will arrange similar setups on a permanent basis.

Where the calculated risk seems worthwhile, the builder could tool up the machine he recommends to a prospect and run an actual job to the prospect's satisfaction. Where the risk seems too heavy, perhaps

an existing tooling setup could be pulled off the shelf to prove the point.

Hold Own Shows . . . Hints picked up here and there among machine tool builders seem to indicate that if a mass machine tool show is good for business, the idea should be further developed by having builders run their own in-plant shows.

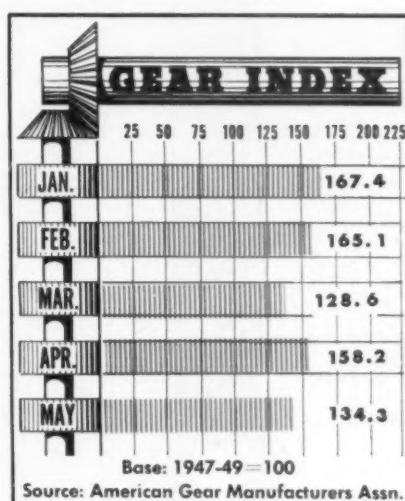
Support for the demonstration type of sales campaign is offered by the growth of sales training programs among machine tool builders. More and more engineers are asking questions from the buyer's side of the desk. Most often the questions refer to special situations not covered in manufacturer's catalogs, and it takes a well-versed sales engineer to give all the answers.

Cut Reserve Fund . . . Builders of long lead-time machine tools have been hoping for a fair chunk of a proposed \$250 million Defense Dept. appropriation for reserve tools and facilities. Final congressional action on the money bill cut this sum to \$100 million.

Commitments of the reserve fund for new tools will be deferred until the military forces complete their nationwide machine tool inventory, presumably late this year.

Gear Volume Off . . . Business volume in the gearing industry dropped 15 pct in May, compared with April 1954 figures. American Gear Manufacturers' Assn index for May is computed to be 134.3. The previous month's figure was 158.2. Index base of 100 was established during the period from 1947 to 1949.

Ease Export Rules . . . Fourteen commodities, including power-driven metalworking machine tools and certain other industrial machines and parts, may now be shipped to most foreign countries without an individual export license. Shipments to Hong Kong, Macao and Soviet bloc countries will still require special licenses.



PERHAPS YOU, TOO, CAN WITH REVERE

This new Oxy-Acetylene welding torch is notable for the use of Revere Extruded Shapes in free-cutting brass—and also for its light weight, good balance, and easy handling. The connection for the gas tubes is machined from a shape, and silver-brazed to the fluted handle, also a shape, which is in turn brazed to a shape that contains the needle valve controls. Another fluted shape is the mixer, and the same shape is also the source of the next part, which is a second mixer. Another shape forms the nut which attaches the nozzle to the assembly. The nozzle, by the way, is made of Revere Free-Cutting Copper Rod, which is upset, drilled, swaged to size, and then chrome plated. The manufacturer of this new torch came to Revere to learn about the possibilities of extruded shapes.



New Model 30 Aircraft Welding Torch, made by National Welding Equipment Co., 218 Fremont St., San Francisco 5, Calif. The multiple mixer design is patented. Weight, 8½ oz. with medium nozzle. Made almost entirely from Revere Metals in extruded shapes and rod.

MAKE A BETTER PRODUCT EXTRUDED SHAPES

If you have a product whose design includes a part or parts calling for extensive machining along the longitudinal axis, such as flatings, curves, recesses, remember Revere Extruded Shapes. They can greatly reduce machining time, lessen scrap, lower production costs, and speed up output. See the nearest Revere Sales Office.

REVERE
COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.
Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.;
Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere.

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The Iron Age

SALUTES

Phillip C. Osterman

Service to community ranks with contributions to industry as the main goals of this top organizer.



SOME people who enjoy the benefits of working under the free enterprise system are satisfied to demonstrate their appreciation of it with mere Fourth of July oratory. Phillip Osterman, president of American Gas Furnace Co., takes a more positive attitude.

As president of Junior Achievement of Union County, N. J., he has devoted a great deal of energy and his very considerable organizing talents to providing practical training in American business methods to more than 5000 young men and women of high school age.

Under his direction Union County's Junior Achievement rose from 34th place in national standing to one of the top three JA programs in the country. At present 26 firms in the Elizabeth, N. J., area are sponsoring small business enterprises operated entirely by young people.

Mr. Osterman joined AGF more than 50 years ago as chief draftsman, worked his way up through offices of superintendent, chief engineer, general manager and vice-president and secretary.

Under his leadership AGF developed such new heat-treating processes as continuous heat-treating with atmospheric control, vertical retort carburizing and continuous gas carburizing. At least five original heat-treating applications have been invented and patented by him.

In addition to his Junior Achievement activities, Mr. Osterman has found time to be a director of the Chamber of Commerce, member of the board of trustees of Community Welfare, treasurer of Elizabeth General Hospital and serve on several other committees.

When he has any leisure time he enjoys pen and pencil sketching, reading classical poetry or just socializing with his college-age grandson and granddaughter.

BIG MANIPULATOR

Alliance MANIPULATOR INCREASES PRODUCTION FROM 200 TO 400%

This 75-ton Alliance Manipulator is the world's biggest. It handles ingots for ship shaftings . . . press columns, large naval gun barrels and other huge jobs.

At the International Nickel Company plant in Huntington, West Virginia, two 4-ton straight line Alliance Manipulators serve a single hammer . . . forging Monel metal ingots from 14"x14" down to 8"x8". They helped boost 8 hours' production to 250% of the former record capacity with less than half the number of men.

Alliance builds forging manipulators in capacities from 1 to 75 tons in the following types . . . straight line trolley only, straight line trolley with bridge, sluing trolley type, sluing trolley type with bridge and crane type. Some bridge type manipulators handle the entire job—charging, forging, discharging and delivering.

Users of Alliance Machine Company Manipulators report 200 to 400% increased production with a smaller crew.

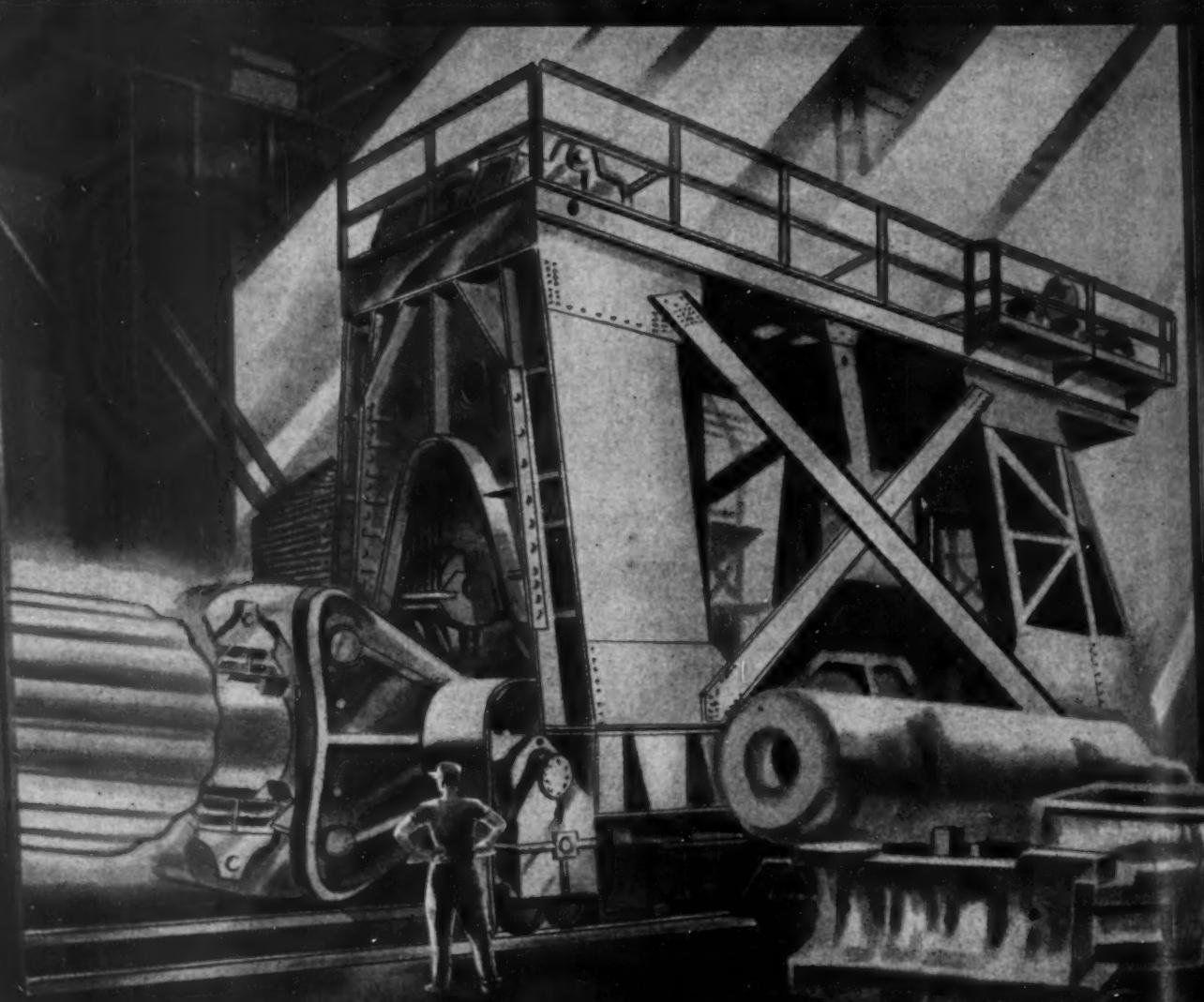
If you are not using Alliance Manipulators now, you can increase production and save money by writing us today.

THE *Alliance* MACHINE COMPANY

Main Office: Alliance, Ohio

LADLE CRANES • GANTRY CRANES • FORGING MANIPULATORS • SOAKING PIT CRANES
STRIPPER CRANES • SLAB AND BILLET CHARGING MACHINES • OPEN HEARTH CHARGING
MACHINES • SPECIAL MILL MACHINERY • STRUCTURAL FABRICATION • COKE PUSHERS

Give Us The Runway And We'll Lift The World



The Iron Age

INTRODUCES

Jack G. Allen, elected president, general manager and a director of Artisan Metal Works Co., Cleveland.

Albert P. Heiner, named vice-president - Public relations and traffic, Kaiser Steel Corp.

Richard J. McGinn, named manager, Stud Welding Co., Inc., Houston headquarters.

J. B. Henry, Jr., appointed manager, Architectural Div., Allegheny Ludlum Steel Corp., Pittsburgh.

Alwyn F. Yeatman, promoted to manager, sales accounting, National Supply Co., Pittsburgh; and **Edward B. Malloy**, appointed general auditor.

J. J. Murray, appointed manager of foreign sales, International Div., Hewitt-Robins, Inc.; and **J. J. Sheehan**, named manager of foreign operations.

R. R. Hogan, named manager, Kaiser Steel Corp.'s southern district sales office, Los Angeles headquarters.

Bernard D. Cox, named manager of advertising and sales promotion, Rockwell Mfg. Co.'s Delta Power Tool Div.

William B. Wilson, appointed manager, General Electric Co., industrial power generation unit.

Robert O. Dehlendorf, appointed general sales manager, Electric Motor Div., A. O. Smith Corp., Milwaukee; and **Richard H. Heilman**, appointed general traffic manager.

Thomas C. Knudsen, appointed assistant to the general manager in charge of the Mechanical Product Development Laboratory, Norwood Works, Allis-Chalmers Mfg. Co.; **Vernon B. Honsinger**, named assistant to the general manager in charge of the Electrical Product Development Laboratory; and **Dwight H. Lory**, appointed manager, Texrope Drive Section.

Alanson L. Brooks, appointed assistant to the manager of purchasing, Kaiser Aluminum & Chemical Corp., Oakland, Calif.

Paul F. Pardonner, named assistant manager, Detroit sales district, Armco Steel Corp., Middletown, Ohio.

John P. DeHetre, becomes assistant general manager of sales, The Youngstown Sheet & Tube Co., Youngstown, Ohio; **Charles T. McClure**, named manager of Oil Country Tubular sales; and **Robert E. Hawley**, becomes manager of Line Pipe sales.

Richard F. Bergmann, Jr., appointed sales manager of Link-Belt Africa Ltd.

Stanley R. Sellers, appointed new district sales representative, Republic Steel Kitchens, Canton, Ohio.

Herchel M. Richey, named general factory manager, The Timken Roller Bearing Co., Canton, Ohio; **Henry A. Tobey**, promoted to factory manager, Canton and Gambrinus bearing factories; and **Wilbur L. Young**, named general superintendent, Canton Bearing Div.



H. E. MARTIN, elected president and director, Metal & Thermit Corp., New York.



C. I. BRADFORD, appointed president, Rem-Cru Titanium, Inc., Pittsburgh.



NORMAN B. OBBARD, promoted president, U. S. Steel's American Bridge Div., Pittsburgh.

Personnel

Dale B. Kennedy, named plant manager, Electricweld Tube Div., Jones & Laughlin Steel Corp.; and William Roesch, named general plant foreman.

Frank Pfefferle, becomes special projects manager, The Cincinnati Shaper Co.; Alfred Baumgartner, becomes sales manager; and Joseph Warren, named advertising manager.

John Reedy, appointed assistant regional manager, General Motors Dept. of Public Relations, General Motors Corp., San Francisco, Calif.

John D. Newell, appointed district manager, new San Diego Sales office, Ziegler Steel Service Corp.

James B. Cameron, appointed supervisor — employment and training departments, Pittsburgh Works Div., Jones & Laughlin Steel Corp., succeeding Paul C. Kauffman, who has retired.

Daniel P. Lacock, appointed Southeastern regional sales manager, Federal Electric Products Co. and its wholly-owned subsidiary, Pacific Electric Mfg. Corp.

Donald F. Stock appointed laboratory manager, Harbison-Walker Company's Refractories Research Laboratory, Hays, Pa.

Richard F. Graham, promoted to sales representative, Hooker Electrochemical Co.

Thomas J. Hessert, appointed sales representative, Philadelphia area, Inland Steel Products Co.

D. F. McCandlish, appointed regional manager of the North Central Region, in Chicago, Air Reduction Sales Co.

J. C. Sprague, appointed engineering manager, Eaton Mfg. Co.; and H. M. Reigner, appointed sales manager, newly created Aircraft Div., Battle Creek, Mich.

QUANTITY PRODUCTION OF GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1866

THE WHELAND COMPANY

CHATTANOOGA 2, TENN.

Metal Stamping Facilities

by Lansing at your Service for...

ELECTRICAL EQUIPMENT
HOUSEHOLD APPLIANCES
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INDUSTRIAL EQUIPMENT
FARM IMPLEMENTS

Lansing Stamping Co.
ESTABLISHED 1914 MICHIGAN



WILLIAM E. WARD, elected president and general manager, Russell, Burdsall & Ward Bolt and Nut Co., Port Chester, N. Y.



CARROLL L. WILSON, elected vice president and general manager, Metals & Controls Corp., Attleboro, Mass.



N. J. CONNOR, becomes manager, Babcock & Wilcox Co., New York.



EDWARD C. KOESTER, appointed district manager, Wyckoff Steel Co., Detroit.



HERE COMES 30,000 lbs. OF SCRAP . . . handled in a one-man load, handled over-the-road by the ROSS Carrier!

Most people don't think of industrial scrap handling as a unit-load proposition. It's usually a pretty messy operation—scrap merely dumped on any empty spot in the yard. But Central Iron & Metal Company, Battle Creek, Michigan, has put scrap handling on a fast, efficient basis simply by capitalizing on the unique advantages of the Clark-Ross Carrier.

Central Iron & Metal provides their suppliers with fabricated collection boxes or "gondolas". These vary in length from 10 to 20 feet; some have a gate at one end to allow a man to roll in a wheelbarrow and dump the load of scrap. The Clark-Ross Carrier delivers an

empty gondola and picks up a "full" at each of the plants served. The Carrier speeds back to the scrap yard, drops the "full", then takes off on another call. Neither rain nor snow can stay these swift Carriers from the completion of their appointed rounds!

Central operates two 30,000 lb. Carriers. They're fast on the road (up to 40 mph) and fast on the load—takes only 3 seconds to pick up or drop a load. Central's customers like the system because of the "good house-keeping" factor. Central likes it because it's fast and inexpensive—a one-man operation which may cover several hundred miles a day.

**CLARK
EQUIPMENT**

ROSS CARRIER LINE
Industrial Truck Division
**CLARK EQUIPMENT
COMPANY**
Benton Harbor 51, Michigan

Send details on the carriers

Name _____

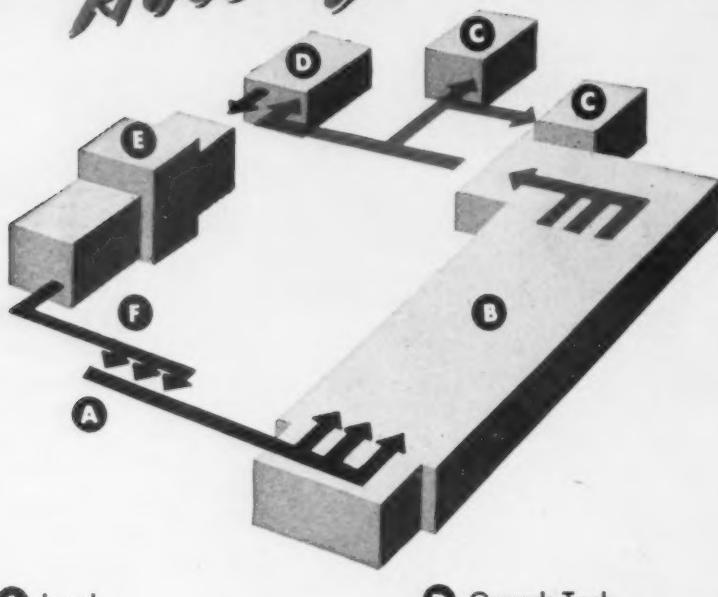
Company _____

Address _____

City _____ Zone _____ State _____

Heat Treat Furnace Layout

by *Holcroft* ... 8th of a Series



- (A) Load
- (B) 3-row Carburizing Furnace
- (C) Press Quench Machines
- (D) Quench Tank
- (E) Both parts feed through single row draw furnace
- (F) Unload

1 Furnace Layout Handles 2 Parts Saves time, man hours; cuts costs

Design experience paid off in this east coast plant. With two parts involved—both receiving the same heat treating cycle, but one requiring press quenching and the other selective hardening—the obvious answer seemed to be two separate layouts.

When given the problem, Holcroft engineers decided one layout would do. The work—drive gears and pinions—is now carburized in a 3-row pusher type furnace. After leaving the carburizing furnace the pinions are quenched by the tray load while the drive gears are individually press quenched and reloaded on trays. Both parts then continue on through the single-row draw furnace.

The results: substantial savings in both time and man-power.

Unusual? Not at all. Just another example of how experience and "know-how" pays off in time, money and job satisfaction.

Write today for complete information. Holcroft & Company, 6545 Epworth Blvd., Detroit 10, Michigan.



PRODUCTION HEAT TREAT FURNACES FOR EVERY PURPOSE

CHICAGO, ILL. • CLEVELAND, OHIO • HOUSTON, TEXAS • PHILADELPHIA, PA.

CANADA
Walker Metal Products, Ltd.
Windsor, Ontario

EUROPE
S.O.F.I.M.
Paris 8, France

Personnel

Continued

James Steele, appointed sales representative, Philadelphia district sales office, Sharon Steel Corp.; **Carl Polonus**, appointed sales representative, Cincinnati district; **Richard Connell**, appointed sales representative, Sharon district; **Robert Bidaman** and **Paul Johnson** have joined general sales office at Sharon. **David Campbell, Jr.**, appointed manager of sales, Sharonsteel Products Div., Detroit.

Fitzhugh Lee Kirk, appointed wage and salary administrator, Standard Pressed Steel Co., Jenkintown, Pa.

Jack H. Senger, appointed sales engineer, Detroit area, Udylite Corp.

Edwin L. Shaw, appointed head of the new Aircraft Products Div., The Denison Engineering Co., Columbus.

Jay P. Nicely, will be in charge of new Midwest sales division, Chicago headquarters, The National Gypsum Co.

Charles J. McCarthy, elected chairman of the board of directors, Chance Vought Aircraft, Inc., Dallas.

OBITUARIES

George H. Anderson, president, Anderson Corp., recently.

Leon H. Johnson, 69, chief engineer, Warren Div., Struthers Wells Corp.

Rawson Vaile, 67, executive vice-president and director of the American Blower Corp., Dearborn, Mich., and a director of the Canadian Sirocco Co., Ltd., of Windsor, Ont.

Lloyd E. Honeywell, well known in industrial advertising circles and former advertising manager, National Acme Co., Cleveland.

Clarence W. Hamilton, 62, public relations director and administrative staff member, Sheffield Corp. in St. Joseph's General Hospital, Little Current, Ont.

Through better properties—

Extend Applications of Nickel Immersion Plating



By A. E. Durkin

Paints & Finishes Specialist
Thomson Laboratory
General Electric Co.
Lynn, Mass.

- ◆ Ability to produce uniform deposits on internal as well as external surfaces is a major advantage of the nickel immersion process . . . Properly applied, deposits have other superior properties which make these coatings desirable for many new applications . . . As-plated, coating hardness is about 45 Rc, but heat treatment between 750° and 1000°F increases hardness to 65 to 70 Rc.
- ◆ In comparative tests, heat-treated nickel immersion deposits on spline couplings offered the best resistance to fretting corrosion and wear . . . Humidity tests show that immersion coatings are superior to electrodeposited nickel, and equal or superior to chrome . . . Being an electroless process, there is no expense for electrical equipment or power.

◆ INDUSTRY has held a great deal of interest in the nickel immersion process because of its ability to coat parts uniformly. However, properly applied, the process has other important advantages. In a number of tests, the Thomson Laboratory, General Electric Co., Lynn Mass., determined many properties and characteristics of the resultant coatings. To application and design engineers, the information can aid in establishing uses and limitations for these coatings.

Considerable work has been done with nickel immersion coatings since the original baths were developed in the National Bureau of Standards. The International Nickel Research Laboratory has investigated these coatings and reported its findings. The Metal Processing Co. has worked on the production use of the coatings while the interest of W. F. Cahill Co. has been in supplying solutions. The General American Transportation Corp. has patented a solution process.

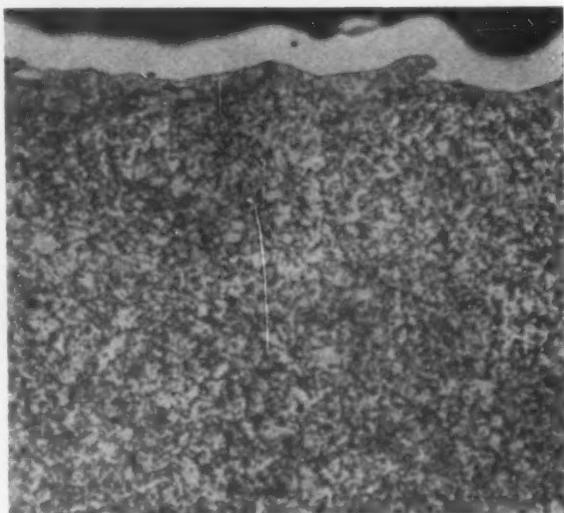
The fundamental reaction for deposition of nickel on steel from a nickel salt may be shown as:



An equivalent amount of iron is dissolved in the nickel solution. For every ounce of nickel

replaced, more nickel salts must be added for the reaction to continue, and the iron must be removed from the bath.

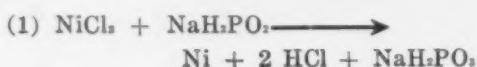
In the original NBS process, deposition was brought about by the reduction of nickel by



MAGNIFIED section shows how uniformly nickel immersion coat is deposited on surfaces.

A unique property of a nickel immersion coating is its hardenability. Heat treatment increases its hardness by 20 to 25 Rc.

hypophosphites. The reactions may be expressed as:



The resultant coating is not pure nickel but contains phosphorous. This is substantiated by chemical analysis as well as by the hardening properties of the coatings.

The rate of plating appears to vary with the plating conditions. Some claims are made that rates of 4.7×10^{-4} g per sq cm per min are possible. Others only claim rates of 1.8×10^{-4} g per sq cm per min. However, rates vary considerably with the pH and are sinusoidal in nature.

Since the process is an immersion or electroless type, uniform deposits can be obtained on all flat surfaces, corners, edges, recesses, bores and diameters, internal or external. Therefore, it offers an excellent method of plating for salvage or protection of precision parts or tools. Thieving or shielding problems such as would be expected with electrolytic deposits can be eliminated.

These coatings will find widespread application on complex parts which cannot be pro-

HOW PROCESS RATES

Advantages

Will coat complex parts uniformly.

Requires no electric power.

Permits continuous coating buildup, limited only by cost and processing time.

Good resistance to humidity and salt spray when compared to electroplated nickel and chrome. Coatings can be welded.

Disadvantages

More costly from material and control standpoints.

Reduces physical strength of base metals when hardened.

Requires constant attention in continuous processing if operated manually.

Coatings are affected by severe outdoor weathering conditions.

Higher coefficient of friction than chrome.

Typical Uses

Deicer assemblies

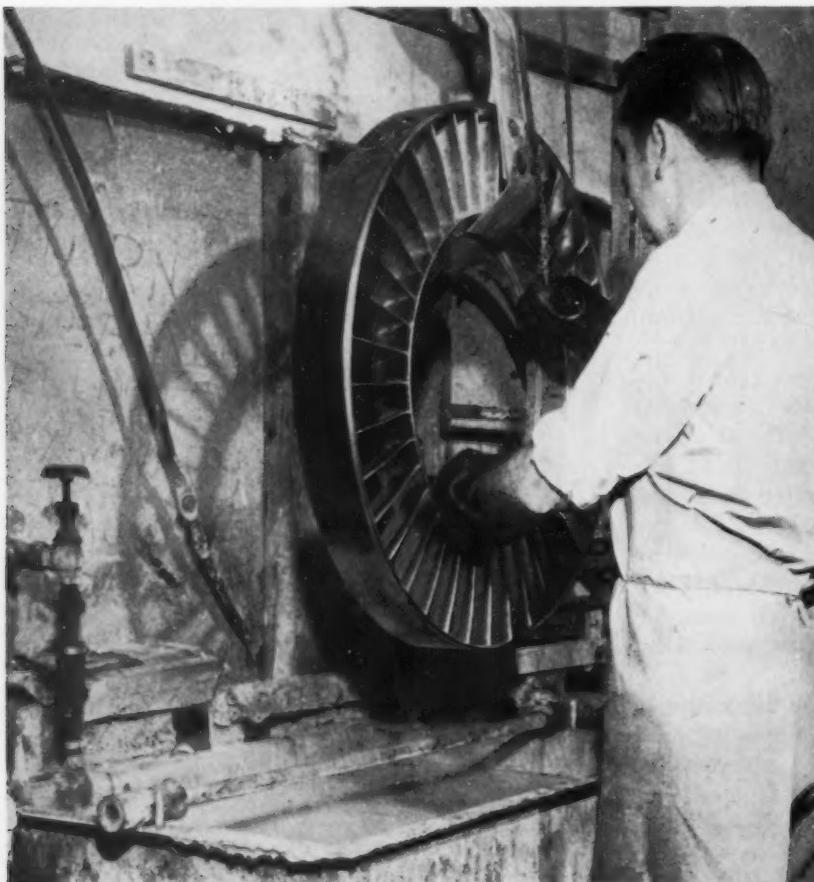
Fuel pump impellers

Valve stems and seats

Buildup on spline gages and other precision tools

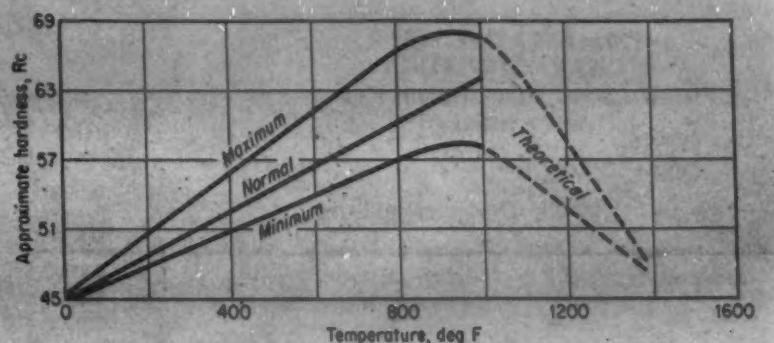
Locomotive roll pins

Taps and drills



INTERNAL surfaces of hollow vanes on this part are plated just as uniformly as the external surfaces. Other methods would be inadequate.

HARDNESS of nickel immersion deposits increases from about 45 Rc to 65 or 70 Rc when heat treated at 750° to 1000°F for 1 hr.



tected by other means. A typical example is a complex fan-like part which requires the internal surfaces of hollow vanes to be protected against corrosion as effectively as the outer exposed surfaces. Electrodes could not be placed in each vane nor in the hollow areas of the outer ring. Painting would likewise be inadequate.

A unique property of the nickel immersion coating is its hardenability characteristics on heat treating. This property shows the presence of phosphorous in the coating which can also be confirmed by chemical analysis. In the as-plated state, coating hardness is 45 Rc. This value increases to a maximum of from 65 to 70 Rc on heating for 1 hr between 750° and 1000°F. Intermediate values are obtainable by heating at correspondingly lower temperatures.

Temperatures above 950° to 1000°F tend to soften the deposit, but up to 1400°F the deposit retains its original as-plated hardness of about 45 Rc. Extended periods of time up to 2000 hr at temperatures below 1000°F reveal a drop of only 10 pct from its as-hardened condition.

Deposits will stain when heated above 500°F. If this is objectionable, hardening should be carried out in a nonoxidizing atmosphere or in a neutral salt bath.

To determine the comparative wear characteristics of the immersion coating, spline couplings were tested in fretting corrosion and wear tests. Tests were performed on a torsional vibration test stand, using a universal joint to produce the torsional vibration in the shaft.

The part was run at its critical speed, 1390 rpm, with $\pm 2^\circ$ torsional input to the shaft. The output vibration amplitude remained relatively constant at $+10^\circ$. This procedure was used so that the couplings would be subjected to the severest conditions, resulting in a minimum test time to obtain the desired results.

The tests indicated that the nickel immersion heat-treated couplings offered the best resistance to corrosion and wear. Both dull and bright chrome-plated couplings had the least resistance to these agents while other surfaces

gave intermediate results as shown in Table I.

Results of these tests were confirmed in respect to fretting corrosion by applying a hardened nickel immersion coating on about 10,000 roll pins. These parts proved completely satisfactory by eliminating fretting corrosion, and were superior to chrome deposits in this respect.

In fatigue tests, nickel, chromium and nickel immersion deposits were plated over a set of standard rotating beam fatigue specimens which had been finish-ground from AISI 4140 bar stock. The nickel and unaged nickel immersion plated specimens exhibited slightly higher fatigue strengths than standard specimens with a ground finish. The chromium and nickel immersion plates markedly decreased the fatigue strength of the material. Results are given in Table II.

These tests indicate that less than 4 pct in fatigue strength of 4140 might be gained by nickel plating or nickel immersion coating without subsequent aging. This improvement is insignificant. Heat-aged nickel immersion coating or untreated chromium plate reduce the fatigue strength about 20 pct. Such a reduction is significant.

A salt spray comparison was made between nickel immersion coatings of various thicknesses and chrome and nickel electrodeposited coatings. Results of these tests are shown in Table III. Heat-treated samples were aged for 1 hr at 700°F before testing. The tests were conducted in a 20-pct salt spray maintained at room temperature. From the results, it can be concluded that immersion coatings are comparable with electrodeposited coatings.

To determine the effect of various thicknesses of nickel immersion coatings on steel, additional salt spray tests were made. Results are shown in Table IV. Humidity resistance was determined by subjecting certain coatings to 100 pct relative humidity at 120°F for 787 hr. After testing, the samples were cleaned of corrosion products and then rated by listing in decreasing resistance. Results of the tests in

TABLE I

**COMPARATIVE WEAR
CHARACTERISTICS**

of Immersion and Electrodeposited Coatings
(Spline couplings)

Coating	Running Time, hr	Remarks
Nickel immersion, heat treated	37.75	Some evidence of corrosion on teeth. Very little wear from action of driven shaft teeth on coupling.
Nickel immersion, heat treated	16.45	Slight corrosion and very little wear.
Hard chrome	23.75	Some corrosion. Some evidence of tooth wear. Indications of wear from action of driven teeth on coupling.
Hard chrome	7.15	
Nickel immersion, untreated	24.00	Considerable corrosion on coupling teeth. Some wear from driven teeth.
Bright chrome	22.00	Considerable corrosion. Chrome plate worn off from action of driven teeth on coupling.
Dull chrome	23.00	Considerable corrosion. Chrome plate worn off from action of driven teeth on coupling.

TABLE II

**EFFECT OF PLATING
on Fatigue Strength
(AISI 4140 Bar Stock)**

Surface Treatment	Fatigue Strength, psi, at 10 ⁸ cycles
Ground finish	66,500
Nickel plate	69,000
Nickel immersion, unaged	68,000
Nickel immersion, heat aged	53,500
Chrome plate	52,500

TABLE III

SALT SPRAY COMPARISON
of Immersion and Electrodeposited Coatings

Coating*	Initial Rust, hr	Condition after 24 hr after cleaning, pits
Chrome, heat treated	10	2
Nickel immersion	5	15, 2 deep
Nickel immersion, heat treated	7	15 to 25
Chrome	5	20 to 30
Nickel, heat treated	7	50 to 60
Nickel	5	Completely pitted

* All thicknesses are 0.0004 in.

TABLE IV

EFFECT OF THICKNESS
on Salt Spray Resistance

Immersion Coating Thickness, in.	Heat Treatment*	Initial Rust, hr	50 pct Corroded, hr
0.0003	yes	5	48
0.0003	no	4	140
0.0005	yes	8	125
0.0005	no	6	147
0.0008	yes	13	213
0.0008	no	10	213

* Heat-treated samples were heated at 850° F for 1 hr

TABLE V

HUMIDITY RESISTANCE

of Immersion and Electrodeposited Coatings

Coating*	Initial Rust, hr	General Rust	Condition After Cleaning, Pits
Chrome, heat treated 1 hr @ 700° F	307	...	5 deep
Nickel immersion, heat treated 1 hr hr @ 700° F	307	...	10 to 15 fairly deep
Nickel immersion Nickel, heat treated 1 hr @ 700° F	235	...	20 to 30
Chrome	43	700	Many small
Nickel	19	787	Many
		600	Many deep

* All thicknesses are 0.0004 in.

Table V show that the nickel immersion coatings are superior to nickel electrodeposits, and are equal or superior to chrome.

Inconclusive data has been obtained on roof weathering tests. In some atmospheres, inland, immersion coatings withstood exposure up to one year without failure.

In salt water atmospheres, immersion coatings have had very limited life—less than one month.

The process offers many possibilities for salvaging various items. For example, the last 12 in. of an assembled turbine shaft weighing about 2 tons had to be plated 0.0004 in. on its diameter to fit its mating part. Using insulation and gas burners, the undersized area was heated in a vertical position. A small portable tank containing nickel immersion solution was placed under the shaft. The part was then plated to size resulting in a saving of \$600 for remachining its mating part.

ACKNOWLEDGMENTS

The author expresses appreciation to the Cambridge Plating Co., Cambridge, Mass., for the use of certain photos and to J. E. Hughes of the Thomson Laboratory for assisting in the application of immersion coatings.

Ferromanganese Furnace Fumes Cleaned Successfully



By C. H. Good, Jr.
Asst. to General Superintendent
Duquesne Works
United States Steel Corp.
Duquesne, Pa.

♦ Ferromanganese furnace gases, hard to clean because of the fineness and type of dust contained, are now being successfully cleaned at the Duquesne Works of U. S. Steel Corp. . . . The specially designed equipment combines gas conditioning towers, electrostatic precipitators, and dust handling equipment.

♦ Gas fumes are first cooled by water sprays in the conditioning towers . . . Fine dust particles are then ionized and collected in the precipitators . . . The dust is removed, mixed with water, briquetted, and taken to storage . . . Methods are now being studied for making the briquetted material, high in manganese, suitable for recharging in the blast furnace.

♦ SUCCESSFUL SOLUTION of the difficult problems involved in cleaning ferromanganese furnace gas has been reached and proved in practice at the Duquesne Works of United States Steel Corp. near Pittsburgh. Specially designed equipment, in operation since July 1953, daily cleans 135,000 cfm of gas produced by two ferromanganese furnaces. Approximately 105 tons of dust per day is collected from the precipitators. As little as 0.15 grains of dust per cubic foot of gas can be removed with the equipment.

Because of the nature of dust from ferromanganese gas, standard gas cleaning equipment suitable for use with a basic blast furnace cannot be used. The fine dust particles in ferromanganese gas vary from 0.1 to 1.0 microns, and average 0.3 microns or 0.00001 in. in size. The quantity of fume is about twice that in basic blast furnace gas. After passing through a dust catcher the gas contains about 8 grains of dust per cubic foot.

The ferromanganese furnace, using more than twice as much coke per ton of product and supplied with blast air at 1500° to 1600°F, operates at much higher temperatures than a basic furnace. Water must be sprayed into the furnace above the burden to prevent damage to the furnace top, bell, and hopper. Gas leaves the furnace at 650° to 750°F and has an average moisture content of 15 to 20 pct.

When wetted in standard cleaning equipment the ferromanganese gas-fume forms a hard, cement-like deposit. The fume, once entrained in the conveying water, cannot be entirely removed by commercially available settling or thickening equipment. A complex water treatment plant would be required to prevent stream pollution by the effluent water.

Over a period of years, several cleaning methods and types of equipment were tried with only limited success. Finally a pilot plant designed to both clean the gas and handle and treat the

Charged particles are picked up by collecting electrodes . . .

dust after removal from the precipitators was built at the Isabella Furnaces. From experience with this pilot plant, a larger gas cleaning plant was built at the Duquesne Works. The plant has five units, each with a conditioning tower, precipitator, and dust handling equipment. It occupies a ground area approximately 150 ft sq. Total height of equipment above ground level is 90 ft.

A brick-lined 8 ft diam rough gas main carries incoming gas from the furnaces. Dirty gas enters the bottom of each of the five conditioning towers through a 5-ft diam inlet main provided with a mechanical goggle valve for normal operation and a plate goggle valve for use if the mechanical valve is defective. Gas flows upward through the 15 ft diam conditioning tower which stands 60 ft high above the centerline of the incoming gas main.

Three banks of water sprays cool incoming gas from 700° to 350°F. The fine water mist is completely evaporated into the gas. There is no impingement of water on side walls of the tower and no water effluent results. Humidification of the gas helps obtain smooth, efficient electrical operation of the precipitators. Accumulated dust at the bottom of the cooling tower is continuously removed by a dust plow, a star valve and a 6-in.

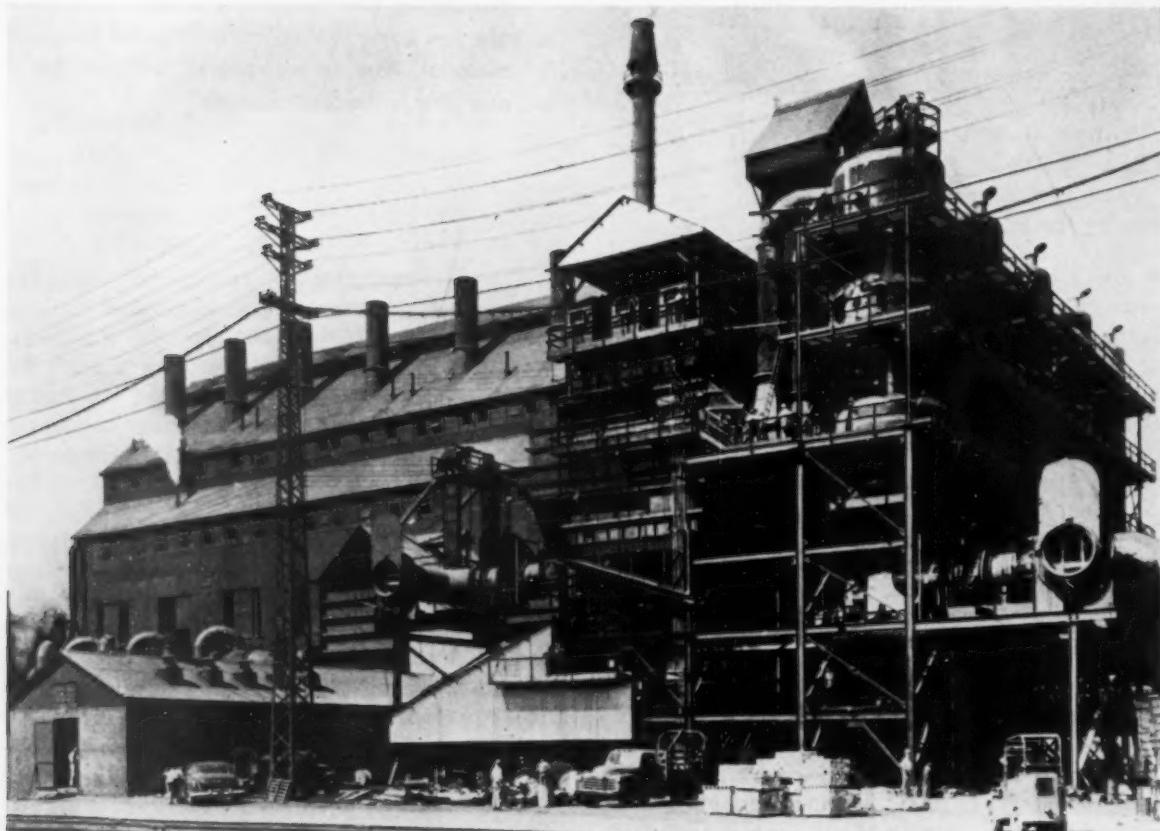
ribbon conveyor. Rappers acting on the outer shells of the conditioning towers assure removal of dust accumulations without re-entrainment in the gas stream.

Gas leaving the top of each conditioning tower is conducted through two 3 ft 6 in. diam down-comer pipes to the precipitator. An inlet distributing baffle assures reasonably uniform flow through the 20-ft square flow area of the precipitator.

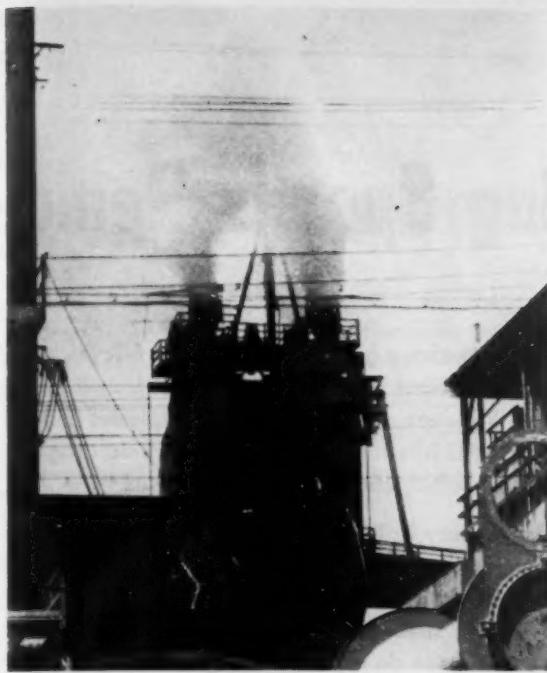
Dry, plate-type precipitators are used. The 440-v, 60-cycle power supply is transformed and rectified by oil immersed tube-type rectifiers to a potential of 65,000 to 75,000 v which is impressed across the electrodes to ionize the gas. Discharge electrodes, 3/16 in. square twisted steel rods about 22 ft long, are suspended from an insulated high tension framework on 10 in. and 8 3/4 in. centers. Weights hanging from each discharge electrode maintain rod position and tautness.

Charged particles in the gas stream are attracted to the collecting electrodes. These expanded metal plates are mounted parallel to the gas flow and electrically grounded to the shell. Particles adhering to the collecting electrodes are discharged and dropped to the collecting hoppers with the help of magnetic impulse rappers.

Clean gas is led out of the precipitator through a 5 ft diam discharge line to the 8 ft ID clean gas manifold supplying boilers. Gas flow through the precipitator is regulated by a butterfly and



FERROMANGANESE gas cleaning plant at the Duquesne Works as it appeared during construction.



LAST CLOUD of fume and dust from ferromanganese blast furnace before new plant starts.

two goggle valves located in the discharge line.

Dust is discharged from the precipitator hopper by a dust plow, star valve, and a 12 in. ribbon conveyor. The discharged dust is light, fluffy and gray. It weighs 12 lb per cubic foot and contains approximately 21 pct manganese, 12 pct alkali and 2 pct moisture. The dust is pyrophoric and will burn with an exothermic reaction in air.

Five kilns, one for each precipitator, take advantage of the pyrophoric properties of the dust. In oxidizing, the dust increases in bulk density from 12 to 30 lb per cubic foot. The kilns, 30 in. in diam and 20 ft long are rotated at 10 to 20 rpm through a variable speed drive. They are provided with an outer shell and with gas under-firing to start the oxidation. After the dust has started to burn, further under-firing is not required because sufficient heat is generated by the exothermic reaction. The hot, burned dust is discharged from the kilns into five water jacketed mixers where water is added to agglomerate and cool the dust.

Enclosed 18 in. belt conveyors transport the partially wetted dust from the primary mixers to bucket elevators which supply two large batch-type mix-mullers. More water is added and mulled into the dust to attain a proper consistency for briquetting. All conveying equipment is installed in duplicate for maximum reliability. The final product, a 2 x 2 in. pillow-shaped briquette is produced by feeding the batch from the final mix-mullers through the die rolls of two briquetting presses under 40 ton roll pressure. Briquettes are conveyed to overhead storage bins by endless chain bucket conveyors. Briquettes are being stocked in outside storage piles. Processing requirements to remove alkali and otherwise make

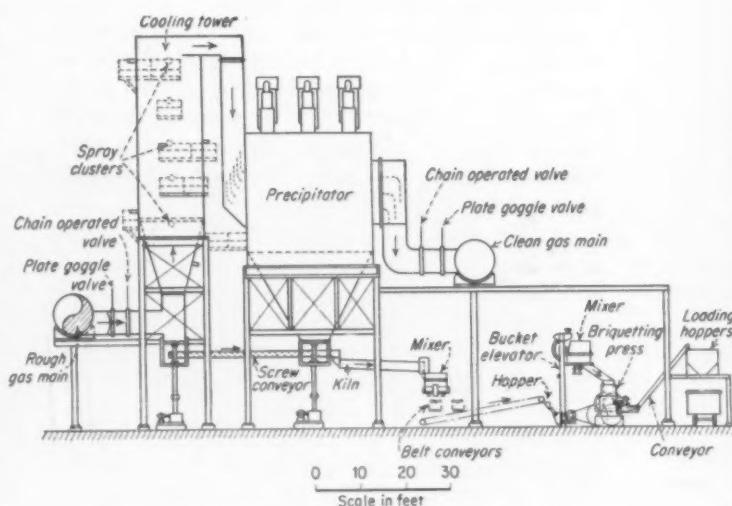


MINUTES LATER, as furnace fumes pass through cleaning plant, clouds of smoke disappeared.

the material suitable for recharging in blast furnaces are being studied.

One operator and two helpers per turn run the plant.

As in the initial operation of all completely new processes, many operating problems have developed, some as yet not being completely solved. The original rappers for removing dust accumulations on the discharge electrodes of the precipitators were found inadequate. Heavy duty pneumatic rappers are now being installed to remove this deposit which, by shortening the electrical path between ionizing and collecting plate, has limited the power input which can be applied without flash-over.



CLEANING PLANT combines five units, each with cooling tower, precipitator, kiln, two mixers, briquetting press and conveying equipment. The plant covers a ground area about 150 ft sq.

Carbide Drilling Speeds Removal

♦ Working 60 ft above ground to dislodge a 6-ft thick slag crust inside a hot blast furnace is a rough job . . . It means drilling deep holes around the stack to set explosive charges . . . Of many drill bits tested, three-wing carbide drag bits proved fastest, safest, cheapest in the long run.

♦ Hand-held rotary drills also replaced cumbersome, core drill rigs mounted on skids . . . Scaffold weight was reduced . . . Drag bits, threaded onto hollow drill strings, can cut 10 holes through firebrick and slag in 8 hr . . . Former methods took 24 hr to do the same job . . . Air blast through the drill string cools the bit and disposes of cuttings.

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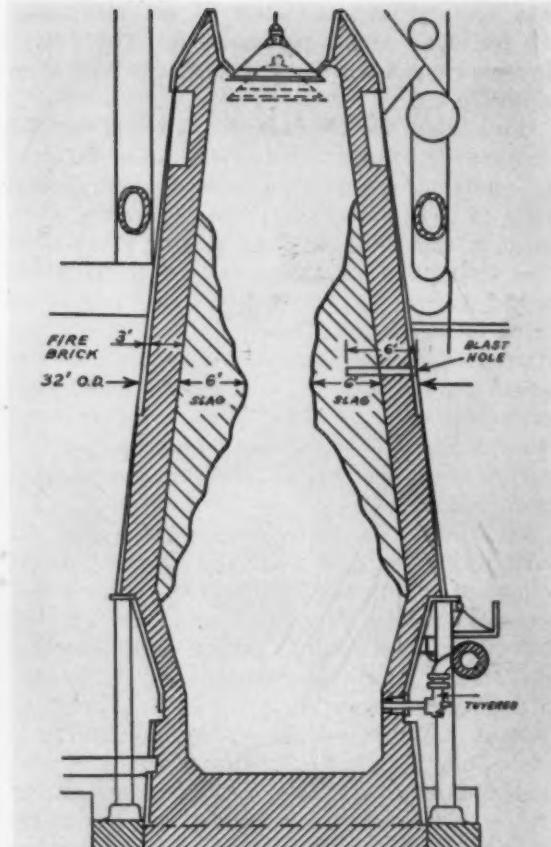


♦ SLAG HAD BUILT UP to the choking point inside the stack of a Birmingham, Ala. blast furnace due to the low grade of iron ore used. Drilling holes in this thick, hot crust in order to blast it loose was slow, dangerous work. Tungsten carbide 3-wing drag bits eventually proved to be the fastest, cheapest and safest of the many drill bit types and designs tested.

The ticklish slag removal job was taken on by the Cowin Co., a Birmingham firm of mining engineers and contractors. Thickest section of the slag crust averaged 6 ft at a point 60 ft above ground level. At this height the stack was 32 ft OD and consisted of a $\frac{3}{4}$ -in. steel shell outside of a 3-ft thick firebrick lining.

Calculations showed that 10 equally spaced holes had to be drilled around the furnace circumference through the firebrick, and penetrating the slag crust to a depth of 3 ft. Setting off a suitable explosive charge in the holes would then cause the slag to break up and drop to the bottom of the stack for easy disposal.

Precussion drilling of the holes could not be considered because of danger to the expensive firebrick lining from repeated hammer shock. First drilling attempts used a core drill rig horizontally mounted on a skid and driven by an electric motor. The rig weighed approximately 1100 lb and had to be hoisted onto heavy-duty scaffolding built around the stack.



SLAG CRUST at thickest section averaged 6 ft, needed 10 deep blasting holes to break it up.

of Tough Slag Deposits

Holes were burnt through the steel shell to expose the firebrick lining, and the drill rig was shifted from hole to hole. Since the brick and slag were still extremely hot, water could not be used to remove cuttings and cool the bits. Instead, air was forced through the 2-ft sections of diamond core rod that made up the drill string.

To find the best drill bit—one that would do a quick and economical job—many designs and styles were tested. Some were purchased outright while others were designed and made in Cowin's own shops.

Some bits were carbide tipped and others were hardfaced with welding material. With these early bit designs it took 24 hr of hot hazardous work to drill the 10 6-ft holes. Cost per foot of hole drilled was very high.

Today, these 10 6-ft holes are drilled in 8 hr by the use of Kennametal 3-wing drag bits with a 3-in. diam and a threaded shank. The job is done with greater speed and safety and costs have been cut through the use of lighter scaffolding to carry only the weight of two men and a hand-held rotary drill.

For use with this drill, a drill string of 1-in. hexagon hollow drill rod was made up in 2-ft sections. An adapter was welded to the lead section to take the threaded shank of the carbide bit. Other ends of the drill rod were annealed and threaded to take a hollow threaded coupling. A drill chuck was also made to take this same coupling thread.

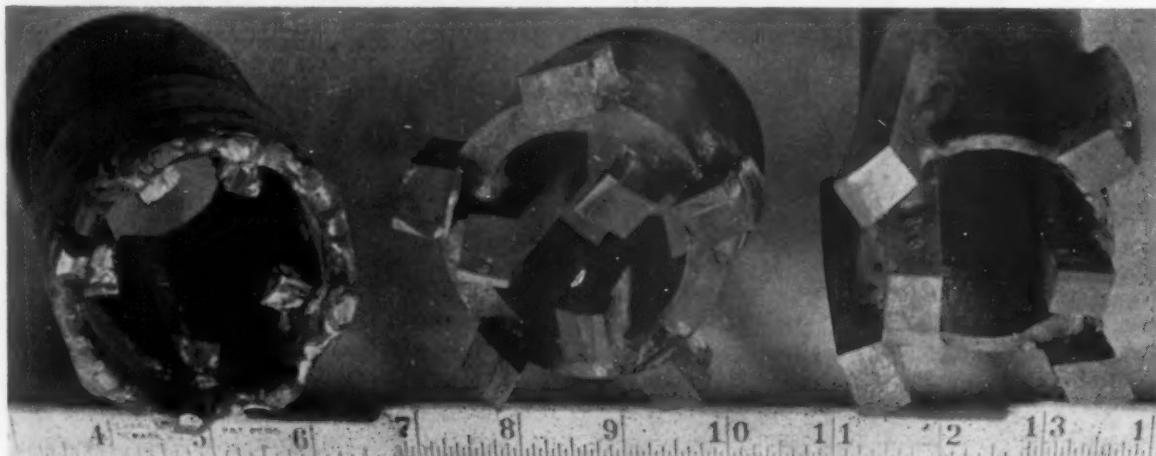
With these 2-ft auger sections, two men on the scaffold platform can now drill through 3 ft of



1|5 1|6 1|7 1|8

TUNGSTEN carbide 3-wing drag bit ready for regrinding after drilling 10 6-ft blast holes.

hot firebrick and 3 ft of hot slag with speed and safety. Combination of the hand-held rotary air drill with a hollow spindle keeps air blowing through the hollow drill string to dispose of cuttings and cool the drag bit.



EARLY drill bits used carbide-tipped "fingers" welded to core bits, steel tubing, iron pipe.

In nodular irons—

Drop Weight Test Measures Notch Ductility

♦ Notch ductility is rapidly becoming a determining factor in selection of materials for specific service requirements . . . Here, applied to nodular iron, is a simple test method for measuring notch ductility . . . It is equally useful to the producer and user of nodular iron castings.

♦ The test is based on sensitivity of notched materials to brittle fracture at lower temperatures . . . The sharpest possible notch condition is introduced by breaking, with a dropped weight, a brittle weld deposit on the specimen . . . The point of nil ductility can be quickly located within a narrow temperature range.

♦ NOTCH DUCTILITY in nodular irons may be simply measured with a drop weight test developed at the Naval Research Laboratory. The test is highly reproducible and easily adapted to foundry use at low cost. Useful to both producer and user of nodular iron castings, the test permits compensation for plus and minus factors affecting notch ductility, particularly in relation to the difficult problem of evaluating microstructure.

Brittle fractures in service generally result from notches present in design such as threads or keyways or as defects such as quench cracks, hot cracks in castings, weld flaws, etc. It is necessary to evaluate ductility of metals not only by tensile tests, which are significant only for notch-free conditions, but also by various tests entailing the presence of notches.

The nodular iron matrix structure is equivalent to that of a high silicon cast steel with the added feature of dispersed nodules of graphite. The spherical shape of the nodules serves to eliminate the condition of internal sharp notches which characterize the flake irons. For this rea-



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son good tensile ductility may be attained by proper heat treatment of the matrix material. Tensile tests of gray iron are in reality "notch tests" because of the presence of the graphite flakes.

By the introduction of notches, nodular iron behaves similarly to steels. Ductility may fall to very low levels depending on the notch and the temperature. Thus notch ductility is an important consideration in the use of nodular irons as it is for steels.

Notch-free nodular iron of good tensile ductility develops extensive deformation, Fig. 1, prior to fracture. Whether or not a nodular iron casting would be subject to brittle failure at a specific temperature would depend not only on the properties of the material but also the sharpness of the notch which it contains. The approach taken at the Naval Research Laboratory to determine the fracture initiation characteristics of metals was to evaluate notch ductility under the most severe conditions, i.e., in the presence of an extremely sharp notch.

A sharp crack is introduced in a specimen large enough to be comparable to a structural or cast part and the temperature below which it is not possible to develop small amounts of deformation without resulting in brittle fracture is determined. This critical temperature, the "nil ductility transition," signifies the temperature of change from ability to deform despite the presence of the sharp crack (appreciable per cent elongation) to a condition of essentially no permissible deformation (zero per cent elongation) in the presence of the sharp crack.

Studies of many steels and nodular irons have

shown that the change from high notch ductility to essentially nil notch ductility occurs sharply, i.e., over approximately a 20° F temperature range. It is interpreted that brittle failure would not start in service if the material retained the ability to deform appreciably in the presence of the sharpest possible crack which could be present. Brittle fracture in service becomes possible when the temperature falls below the sharp crack ductility transition.

The drop weight test gives results which have been shown to correlate with service failures. The test shows the resultant effect of variables which affect fracture resistance. These include chemical composition, heat treatment and micro-structure. The test is ideally suited for use as an alloy development tool or as a specification test for materials to be subjected to serve service conditions. As a specification test it would minimize the necessity for strict composition and heat treatment specifications.

Specimen not machined

A sharp flaw is introduced in the specimen by the cracking of a brittle weld bead (hard surfacing weld metal) on the test piece. Usually six specimens 1 x 3½ x 14 in. are sufficient to determine the nil ductility transition temperature. The nodular iron specimens, Fig. 2, were cast to size using knockoff risers for feeding. No machining is required since the dimensions are not critical.

The specimen, after being cooled or heated to testing temperature, is placed weld down across supports at the bottom of the machine. A 60-lb weight is dropped on the specimen from a height of 8 ft. This causes the specimen to bend at the center. A stop limits deformation to 5°. The brittle weld cracks at approximately 3° of the bend. The weld crack creates an extremely sharp crack-like notch in the specimen. This test determines whether the very small amount of deformation associated with the additional 2° of bending after the crack forms is sufficient to cause the specimen to fracture. Fig. 3 shows details. Fig. 4 shows a broken specimen and an enlargement of the brittle weld area for a specimen which resisted fracture. It should be noted the crack is developed at a notch in the brittle weld. While not essential, the notch insures that the crack will occur at the center of the specimen.

Test highly reproducible

By choosing testing temperatures that bracket the transition temperature, the highest temperature of nil-ductility can usually be established within a span of 10° F with six tests. This go-no test is highly reproducible. Fig. 5 shows the appearance of a large number of specimens from a sheet of rolled mild steel (tensile strength 60,000 psi, elongation 35 pct. reduction in area 50 pct) tested at the temperatures indicated.

Of 14 specimens tested at 10° F thirteen fractured; of 14 tested at 20° F thirteen did not



FIG. 1—Notch-free 1-in. nodular iron plate can be extensively deformed without fracturing by explosion loading.

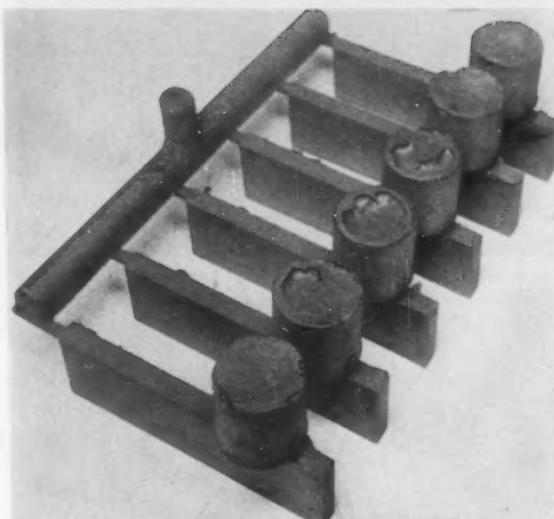


FIG. 2—Cast test pieces require no machining. Riser location minimizes segregation in center.

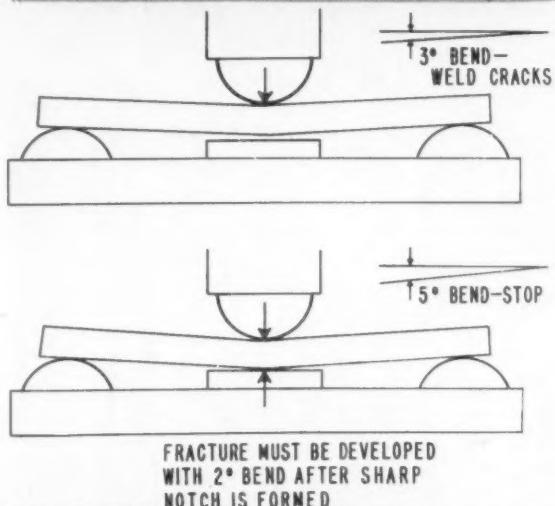


FIG. 3—Test piece is placed across centers and loaded by dropping 60-lb weight from 8 ft.

fracture. Nil-ductility transition of this material is within the range of 10° to 20° F. Tests using a series of six specimens, conducted on this steel earlier, gave a ductility transition of 10° F as should be expected from the results obtained with the extensive sampling shown in Fig. 5.

For cast materials the test reproducibility is

Most important variables affecting drop weight transition temperature are silicon, phosphorus, pearlite and free carbide . . .

in the range of $\pm 10^{\circ}\text{F}$, i.e., a 20°F scatter of "break" and "no-break" results in ordinarily developed. Because of the high sensitivity of the test to composition variables it is essential that variables such as segregation or surface decarburization be minimized. Risers of test specimens, Fig. 2, are off-center to minimize under-riser segregation in the critical center area.

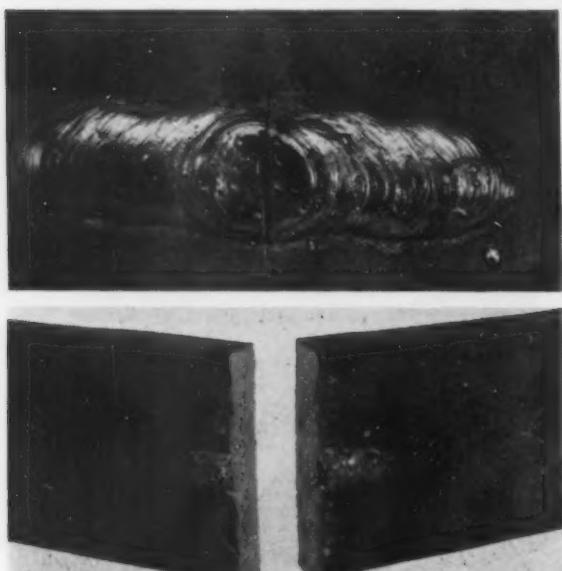


FIG. 4—Brittle weld bead was used to develop sharp notch in nodular iron specimen broken in test (bottom) and specimen which resisted fracture (top). Cut in weld locates notch in center.

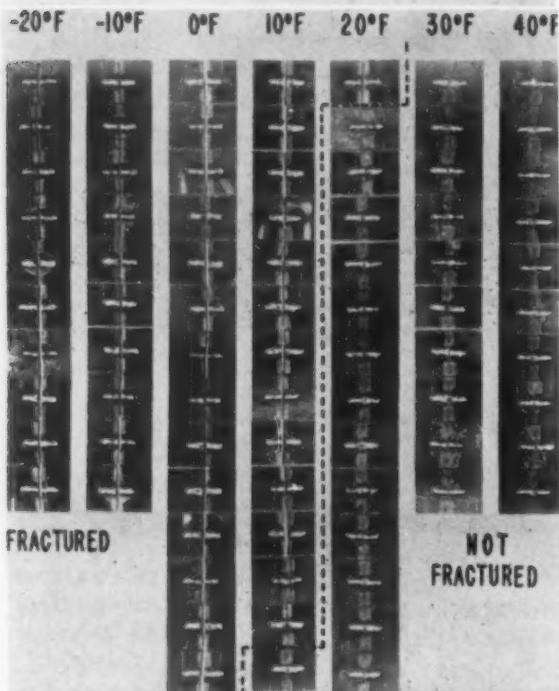


FIG. 5—Specimens from 1-in. steel plate (center sections shown) show test reproducibility.

For each class of materials the nil-ductility transition as determined by the drop weight test corresponds approximately to the temperatures at which certain energy values are indicated by the Charpy V test. The points on the Charpy curves, Fig. 6, are the drop weight ductility transition temperature intersects with the corresponding Charpy V curves.

It can be noted that at these respective temperatures the Charpy V energy values are between 4 and 7 ft-lb. The Charpy values at the nil-ductility transition temperature vary for different materials but they invariably occur near the lower part of the transition portion of the Charpy V energy curve.

The energy value of the upper shelf (flat portion) of the Charpy curve is not related to the nil-ductility transition temperature. Many cases have been observed where a material, whose Charpy value continues to rise with temperature to an upper shelf at 100 ft-lb, is more susceptible to brittle failure at a given temperature than one with its upper shelf at the 20 ft-lb level. The important factor is the temperature range over which the Charpy V transition occurs.

These affect ductility transition

The most important variables affecting drop weight transition temperature, Fig. 7, are silicon, phosphorus, pearlite and free carbide. The effects are essentially linear and additive. A given increment of silicon will raise the drop weight temperature by an equal amount regardless of the pearlite level. Other elements have only a negligible effect.

A formula for predicting ductility transition was developed

$$\begin{aligned} \text{Transition Temp. } ^\circ\text{F} = & -203 + 88 (\text{pct Si}) \\ & + 725 (\text{pct } -0.03) + 1.8 (\text{pct pearlite } -5) \\ & + 30 (\text{pct Carbide } -3). \end{aligned}$$

Where phosphorus is below 0.03 pct, pearlite below 5 pct and carbide below 3 pct the pertinent factors in the equation are considered to be zero. The calculations for the ductility transition of an iron containing 3.18 pct C, 2.70 pct Si, 0.30 pct Mn, 0.15 pct P, 9 pct of pearlite and 2 pct carbide would be as follows:

$$T = -203 + 88 (2.7) + 725 (.15-0.03) + 1.8 (9-5) + 0 = 129^\circ\text{F}.$$

The calculated transition temperature is adjusted to the nearest multiple of 10° (130°F) to correspond to the actual drop weight values which are determined to the nearest 10°F . If a transition temperature lower than 130°F were required it could be obtained by adjusting the silicon and phosphorus levels. A reduction in phosphorus from 0.15 to 0.10 pct would lower the ductility transition to 95°F . A simultaneous reduction in silicon from 2.7 to 2.2 pct would lower the transition to 50°F .

Reasonably close approximations of transition temperature could be obtained by comparing microstructures against micrographic standards with known pearlite content. Transitions as determined by the drop weight test and as calculated from the formula were made for a large variety of nodular irons. Fig. 8 provides a correlation of the actual and the calculated values; it is noted that agreement is usually between $\pm 20^{\circ}\text{F}$. Irons from 88 heats and of widely varying analyses were tested. These were divided into four classes according to their resistance to brittle failure as determined by the drop weight test.

In Class 1 are irons having ductility transitions of 0°F and lower. These may be considered as premium grade irons suitable for severe service in cold weather. The fracture resistance of this class is superior to semi-killed and rimmed, rolled steels of 1 in. thickness (drop weight test range for such steels is 0° to 60°F). These are characterized by very low silicon and phosphorus contents and matrices which are 95 to 100 pct ferritic.

Ductility transitions of irons

Class 2 irons have transitions between 0° and 50°F , about equal in fracture resistance to commercial rolled and cast steels. These irons contain moderate amounts of either phosphorus, silicon or pearlite. Class 3 irons have ductility transitions between 50° and 100°F . They are potentially susceptible to brittle fracture at warm temperature.

In Class 4 are the high strength pearlitic irons and irons containing relatively large amounts of silicon and phosphorus. Ductility transitions are above 100°F . These irons may be expected to be brittle at temperatures below 100°F even in the presence of relatively mild notches.

Control specimens can be used

Whether or not nodular iron castings meet the requirements of a given class can easily be determined if two drop weight specimens are cast and heat treated along with the heat and tested at the lowest temperature for the class. Or, in cases where the lowest service temperature of the castings is known, the control specimens can be tested at this temperature. If the specimens do not fracture it would indicate the castings, when placed in service, could not fail in a brittle fashion.

Ductility transition of specimens from 2 and 4-in. thick plates are the same as with specimens cast to size if there are no differences in the matrix structures. In the irons tested microstructural differences in the matrix resulting from section size exist only in the as-cast condition and are eliminated after suitable heat treatment. Thus, in heat treated irons, the 1-in. test specimens are representative of a variety of section sizes. Hardness of specimens was found to be generally unreliable as a guide to notch ductility.

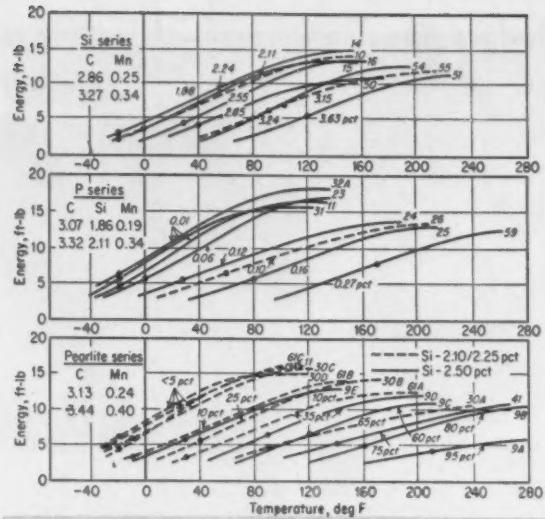


FIG. 6—Charpy V transition curves of nodular irons. Solid points indicate temperature of drop weight test transition as determined by test.

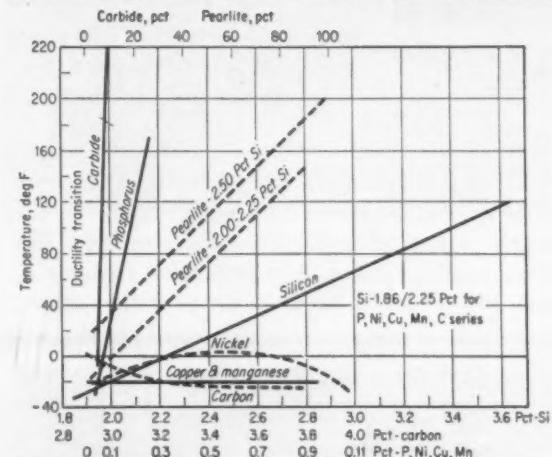


FIG. 7—Effect of composition and microstructure on fracture initiation temperature of nodular iron. Effects are basically linear, additive.

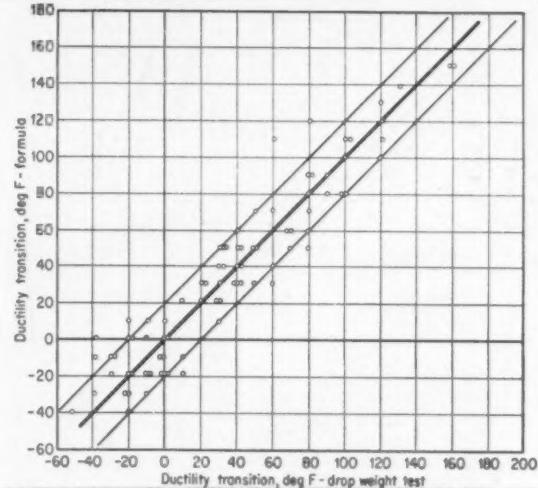


FIG. 8—Comparison of transition temperatures determined by formula and drop weight test.

Reduce spacing errors—

Gear Shaving Insures Close Backlash Control



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Chief Industrial Engineer
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Cleveland, Ohio

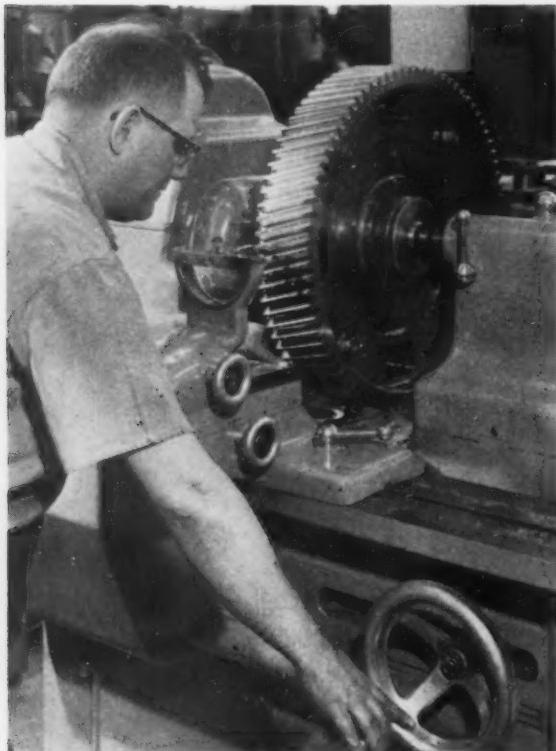
◆ MAINTAINING the quality and accuracy of large precision gears was a major factor in the recent, successful production of a new, five-color offset printing press. Accurate color register at high press speeds depends on precision gears,

◆ Gearing accuracy is a must for a modern, high speed, 5-color offset printing press . . . Complex drive setups use large helical and spur gears . . . For perfect color register, cylinder gears must operate with zero backlash while resisting high compression loading.

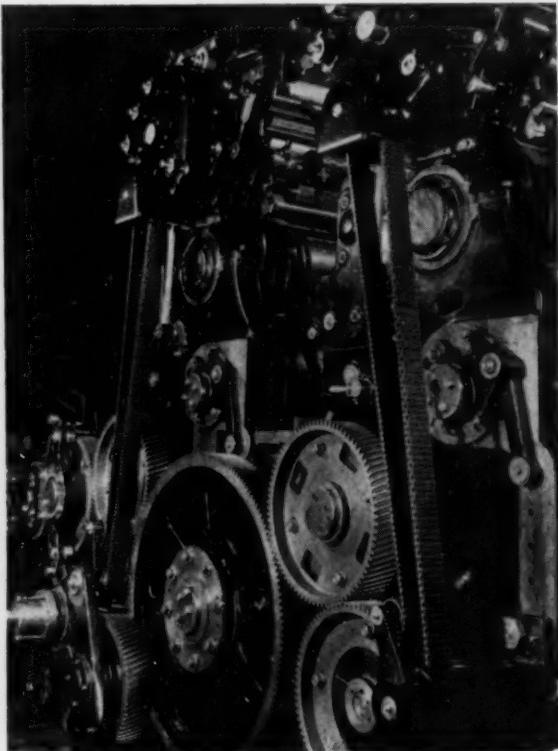
◆ Meehanite and steel gear blanks are heat treated to close tolerances . . . A rough and finish hobbing precedes final rotary shaving to correct minute form and spacing errors . . . Tooth spacing is held within 0.0003 in. . . . Shaving controls tooth thickness to a pin measurement tolerance of 0.004 in. diam. . . . Involute profile and tooth runout is closely controlled.

assembled in the complex trains used in presses.

At the Harris-Seybold Co., Cleveland, Ohio, a maximum of quality control is applied and co-ordinated at each stage of gear manufacture. Blanks are heat treated, machined, hobbed and



CHECKING the lead on a Meehanite main drive gear to a tolerance of 0.0005 in. in 4 in.



THIS gear train serves two printing units and the feeding mechanism on the five-color press.

rotary shaved by modern methods for economical small lot production.

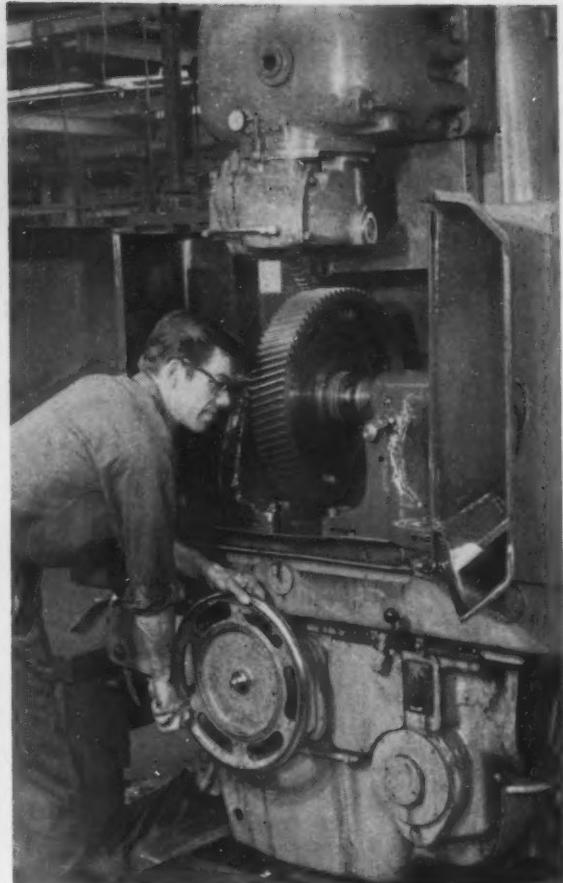
Offset press gear trains include spur and helical gears, some of which are unusually large in diameter and face width. Most of the gears are subject to close dimensional control. Three spur gears that drive the plate, blanket and impression cylinders must operate with zero backlash to achieve consistent true color register.

On the new presses, five of these cylinder assemblies are arranged in sequence. The problem of perfect register is not simple, since the cylinders resist relatively high unit pressures at contact areas. This further complicates the gear drive problem. With high compression loading, minute variations in tooth form or spacing will cause slippage and loss of register.

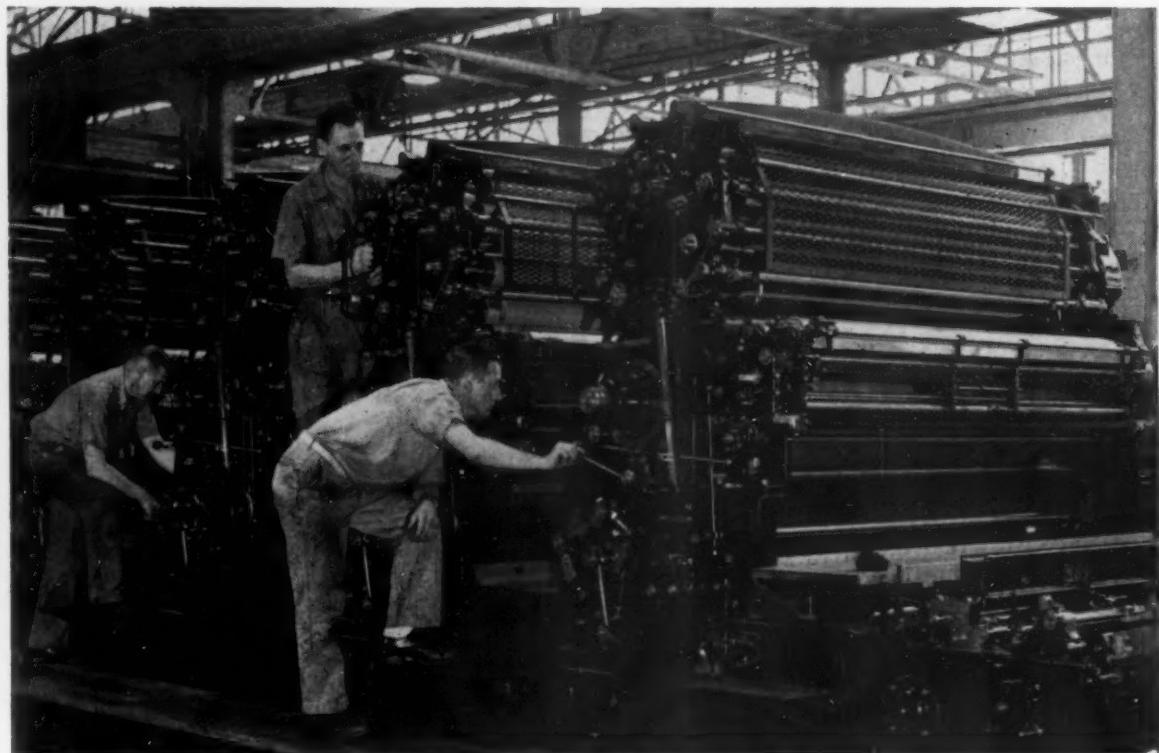
Shaving is final step

The new press has a 35-gear main drive train made up of helical gears. All gears are Meehanite castings, except for an SAE 4140 reduction drive pinion. Gear teeth are 5 diametral pitch, 20° press angle and 20° helix angle. Teeth are finished to specified tolerances by rotary shaving.

To provide for zero backlash operation, the middle blanket cylinder uses two gears; one a Meehanite casting, the other a thinner SAE 4140 steel gear. The gears are mounted adjacent to each other throughout the gear generation, shaving and inspection processes. For final assembly the steel gear is rotated in relation to the cast gear and bolted into position. This increases



SETTING up a large cylinder gear for precision finishing on a modern, rotary shaving machine.



NEED FOR precision gearing is evident as final adjustments are made to the new press.

A thin-tooth roughing hob removes extra stock from the bottom of the teeth . . . Finish hob works only on the tooth profile . . .

thickness of the gear teeth and takes up any backlash that may be present.

Meehanite and steel gears in the transfer and cylinder gear trains are heat treated before machining to minimize distortion. All Meehanite gears are heat treated to 285 Bhn. Steel gears are heat treated to 35 Rc.

Tooth accuracy on these large gears is held to extremely close tolerances. Lead on the helical gears is held to 0.0005 in. in 4 in. Tooth spacing is held within 0.0003 in., tooth-to-tooth. Involute profile is shaved to 0.0003 in. Tooth thickness is controlled by shaving to a pin measurement tolerance of .004 in. diam. Tooth runout measured over pins is held to 0.0015 in.

Cutting tools "check" hardness

Heat treated gear blanks are machined with high-speed steel tools. Undue wear on these tools signals hardness variations that could damage gear hobs and shaving cutters on subsequent operations. Thus, gears successfully machined with high-speed steel can be cleared for the gear cutting department.

Gear teeth are generated on vertical hobbing machines. All gears are rough and finish hobbed with double-thread unground roughing hobs and single-thread ground finishing hobs. The thin-tooth roughing hob removes extra stock from the bottom of the teeth; the finish hob works only on the actual tooth profile. Lead, form, spacing and

runout are checked after hobbing to certify that only a minimum of shaving stock remains.

After hobbing, all gear and hub assemblies are mounted on arbors and shaved on a National Broach & Machine Co. Red Ring rotary shaving machine. Many of these gears have large pilots which fit gear hubs. This allows the gear tooth section to be unbolted and rotated in relation to specific cylinder positions for timing individual press functions.

Inspect each operation

Careful inspections check individual part accuracy from operation to operation. Such critical factors as face, hole and OD runouts on gear blanks must be within specified tolerances before any cutting operations are performed. Also, the "automatic" hardness check by high-speed steel lathe tools assures that precision cutting is confined to machinable parts.

Cutting operations are check-controlled in a well-equipped gear laboratory. Production of optimum gear tooth thickness, finish, and uniformity is aided by maximum use of the rotary shaving process. Minute form and spacing errors are corrected on the shaving machine.

Successful building of this 5-color press and economical manufacturing of its precision gearing were made possible only by use of modern, accurate gear production and control methods.



AFTER heat treatment and prior turning, these transfer gears are rough and finish hobbed.



OUTER steel gear can be rotated in relation to Meehanite inner gear to take up any backlash.

TYPICAL EXAMPLE OF FAWICK APPLICATIONS MODERNIZING PRESS EQUIPMENT



FAWICK TYPE CB
AIRFLEX CLUTCH

FAWICK
**FOR NEW HIGH STANDARDS
OF PRODUCTION SPEED,
ACCURACY AND SAFETY**

Thousands of FAWICK Airflex Clutch and Brake installations on all types of processing machines have proved by their performance that their contributions to increased machine productivity are not mere claims, but actual fact.

Faster machine operating cycles, higher operating accuracy and safety, and lower maintenance costs are several of the "bonus production" factors your machines will produce when equipped with FAWICK. This applies to both new and "converted-to-efficiency" machines.

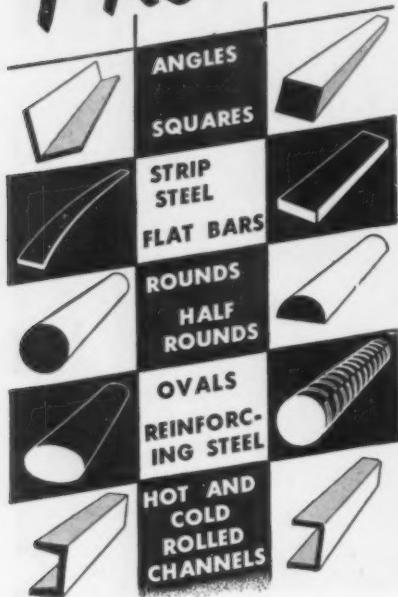
Fawick Engineering Service is available to show the advantages of FAWICK AIRFLEX as applied to your specific requirements. Simply call or write the Home Office, Cleveland, Ohio.

**FAWICK AIRFLEX DIVISION
FEDERAL FAWICK CORPORATION**
9919 CLINTON ROAD • CLEVELAND 11, OHIO

For full information on FAWICK units, write for Bulletin 400-A.

FAWICK *Airflex*
INDUSTRIAL CLUTCHES AND BRAKES

STEEL.. PRONTO!



We're a handy West Coast specialty mill rolling standard merchant bars of mild steel. We're giving quick service [nation-wide] on small tonnage orders—standard shapes in small sizes.

SPECIAL SHAPES
Small Tonnage—Small Sizes
AT LOW COST

Our tooling cost is only a fraction on small sizes compared to large tonnage mills



PACIFIC
STEEL ROLLING
MILLS, INC.
1750 FOURTH AVENUE SOUTH
SEATTLE 4, WASHINGTON

FREE

Technical Literature

Plastic pumps

A new bulletin describing the Vanton line of "flex-i-liner" plastic pumps has been prepared. These pumps, having neither stuffing box, shaft seals, gaskets nor internal valves, are designed specifically to handle highly corrosive fluids and abrasive slurries. The bulletin contains cut-away illustrations, diagrams, applications, operating specifications, performance data and listing of available materials. *Vanton Pump & Equipment Corp.*

For free copy circle No. 1 on postcard, p. 113.

FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 113.

Punch

Bulletin 79-B just published, concisely and fully describes the new Niagara No. 5-24 Deep Throat Hand Lever Punch and Shear. Action photos demonstrate the versatility of the machine in performing diverse punching, notching and shearing operations. Complete specifications for the unit, as well as for extra shearing and punching equipment available, are included. *Niagara Machine & Tool Works.*

For free copy circle No. 5 on postcard, p. 113.

Inspection equipment

Pamphlet covers complete line of precision inspection equipment. Discussed is Diabase black granite used in the equipment which is said to be warp-free, rust-free, extra hard, has long life and is ideal for spotting. Diabase is of uniform hardness, is stiff and has no soft spots to catch metal slivers. It is easily cleaned with any solvent. *Rahn Granite Surface Plate Co.*

For free copy circle No. 3 on postcard, p. 113.

Wheel forming

Folder gives information and illustrations of series "R" wheel forming attachment. The Diaform is a portable attachment, available in three models and is designed to simplify form-truing of wheels used for grinding tools where rake or relief angles must be compensated for. The Diaforms will true wheels from the very smallest up to 20 in. in diam. Also included is a list of specifications. *Pratt & Whitney Div.*

For free copy circle No. 4 on postcard, p. 113.

Pyrometers

New, improved surface pyrometers, with interchangeable extension arms and thermocouples, are described in a 4-p bulletin. Design of the Pyro locking connector permits the use of any Pyro surface thermocouple in one instrument. For a variety of applications, one thermocouple can be interchanged with another in a few seconds without the use of tools. *Pyrometer Instrument Co.*

For free copy circle No. 6 on postcard, p. 113.

Corrosive preventives

Leaflet gives information on CP-430, an all-purpose corrosion preventive with high potential for all inter-shop anti-rust applications. Non-inflammable slushing compounds are readily prepared by emulsifying CP-430 with up to two volumes of water. *R. M. Hollingshead Corp.*

For free copy circle No. 7 on postcard, p. 113.

Valves

Data sheets are available describing the Beckett line of valves. Information on each model includes pictures, description of features, specifications and diagrammatic table and graph. A complete parts list is also supplied along with additional information of interest to the user. Other news of air or hydraulic hand, fingertip, piloted, manifold, solenoid and special valves is also available. *Beckett-Harcum Co., Inc.*

For free copy circle No. 8 on postcard, p. 113.

Construction

Book outlines the departments of the Treadwell Co. Operations comprise four classifications: steel, lead, mechanical, and marine. Supplementing these is the engineering and design department. The Treadwell facilities are geared to meet requirements of industrial development. They include the manufacture of heavy machinery, steel-mill specialties, boats and barges, and the manufacture of weldments of all kinds and sizes. *Treadwell Construction Co.*

For free copy circle No. 9 on postcard, p. 113.

Materials handling

Spring issue of *Material Handling News* offers complete review of products available from Clark Equipment Co. Included in the issue is news of a new factory, stevedoring equipment, building supplies, and other features of material handling. There is also a report of the materials handling parade which featured the Clark 50th anniversary. *Clark Equipment Co.*

For free copy circle No. 10 on postcard, p. 113.

Control system

Folder gives information on how Dorfan Impingo filters are used to solve air pollution problems. The filters do not use cloth type bags. Illustrations are included. *Mechanical Industries, Inc.*

For free copy circle No. 11 on postcard, p. 113.

Turn Page

PITTSBURGH

ARMORED CRANE TRACK WHEELS

Why They Give Exceptional Service ...

• The secret of the long life of PITTSBURGH Armored Crane Wheels lies in something you can't see. It's part of the process perfected by PITTSBURGH which puts the right hardness in the right places. The treads and flanges are armored to the extra hardness of 601-712 B.H.N. 81-95 SC. But the cores? They are left tough and highly resistant to shock.

• This combination of hard treads and tough cores gives average service life up to five times that of untreated gears. It is your assurance of lower crane wheel costs. And PITTSBURGH gives you a written guarantee that you'll get this exceptional service.

• Available in sizes from 10" to 30" diameter. Treads: flat, tapered, radius, or "Pittsburgh Gear Company Standard." Bores and hubs may be finished by you or by us to your specifications.

Do This Today: Send us specifications of the wheels you use and we'll quote on PITTSBURGH Armored Crane Track Wheels ...guaranteed to give longer service.



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Phone: SPaulding 1-4600

subsidiary of BRAD FOOTE GEAR WORKS, INC. • CICERO 50, ILLINOIS



This unitized carton makes one-sixteen!

A Signode Unitizing Method That Can Work For You!

This equation was worked out by a couple of smart Signode Packaging Engineers from *basic data*—and the resulting savings in packaging and handling costs range between 80¢ and \$2.80—each!

Formerly rolls of polyethylene sheeting were shipped in lots of 32 rolls—packed two to the carton. That meant 16 cartons, and 16 handlings all along the line to the consignee.

Signode Engineers devised a basic pallet-pack that put all 32 rolls of polyethylene in ONE unitized pack! This new strap-secured method of packaging saved the shipper \$2.80 in packaging and handling costs per pallet!

Adapting *basic unitizing* methods may mean savings for you, too. Send for our folder showing 6 *BASIC WAYS OF UNITIZING*.



Sheeting on pallet before being capped and strapped.

SIGNODE Steel Strapping Co.

2623 N. Western Ave., Chicago 47, Ill.
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto
Offices Coast to Coast—Foreign Subsidiaries and Distributors World-Wide

Free Technical Literature

Continued

Elevating

Booklet presents the features and specifications, and many of the applications of Portelvator, the portable elevating table. It operates through a mechanical lift principle of worm gear and screw. It is claimed to add hours to productive time and shave dollars from production costs. It also cuts damage to tool and materials caused by manual handling. Illustrations show various models available. *Hamilton Tool Co.*

For free copy circle No. 12 on postcard, p. 111.

Fans

Axial flow, direct-connected exhaust fans are fully illustrated with performance charts, specification sheets and application data in a new bulletin. Application of this positive displacement fan is made in new construction, garages, factories and wherever the necessity exists for distribution of air for health and comfort. *M & E Manufacturing Co.*

For free copy circle No. 13 on postcard, p. 111.

Space wheel

A space wheel that enables you to tell at a glance how to save valuable warehouse space is available from Lewis-Shepard Products. This chart shows the aisle width required for right-angle stacking with all types of fork trucks, the area devoted to aisles in square feet, and the savings made possible in cubic feet of storage space. *Lewis-Shepard Products, Inc.*

For free copy circle No. 14 on postcard, p. 111.

Plug valves

Booklet features information on lubricated plug valves. Included is a separate sheet that gives data on the lubricants to use. The valves have self-sealing design and combine the positive sealing action of a tapered plug type valve with the turning ease of a cylindrical plug type valve. This helps prevent leaks and provides longer valve life. *Homestead Valve Mfg. Co.*

For free copy circle No. 15 on postcard, p. 111.

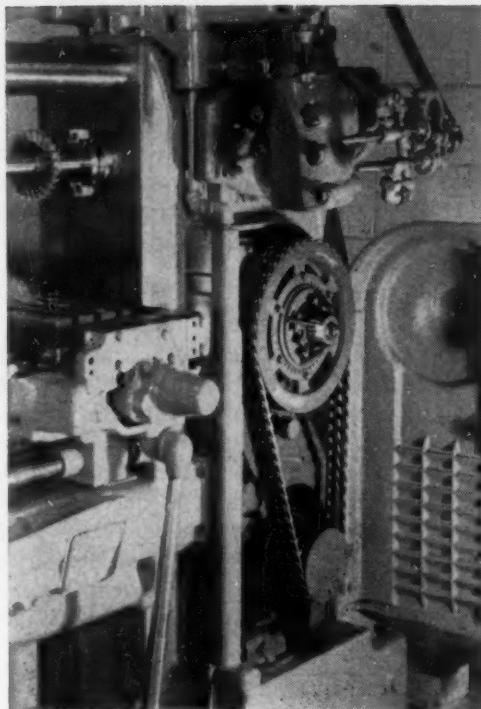
Turn Page



Can Veelos V-Belts

CUT VIBRATION

20% to 90% in your machines?



MACHINE vibration is usually caused by one or more of these five factors: bearings; motor; clutch; sheaves; v-belts. Frequently, v-belts alone are the major cause of vibration.

Actual performance on many different types of machine tools has proved that Veelos v-belts can reduce vibration 20% to 90%.

Here's why this is so...

Regular v-belts have spots of varying density due to their construction. These spots, though not apparent, throw the belt out of balance when the drive is operating. Vibration is created which not only can cause excessive wear on parts of the machine but which may also damage the finished work.

Veelos v-belts have none of these spots. Every Veelos belt is perfectly balanced throughout its entire length. Every Veelos link and stud is absolutely uniform. The smooth, machine-cut sides and the laminated construction of the belt assure full, vibrationless power delivery.

These facts can be readily demonstrated with an electronic analyser. This analyser measures amplitude of vibration to as low as 2-millionths of an inch. A few minutes is all that is required to show you that Veelos runs smoother and creates less vibration than regular v-belts.

Drop us a line or clip the coupon for a demonstration.

Veelos is known as VeeLink
outside the United States.

Manheim Manufacturing & Belting Company
653 Manbel St., Manheim, Pa.

Yes, I would like a demonstration with the electronic analyser.
Have your representative call me for a convenient time.

Name.....

Company.....

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ADJUSTABLE TO ANY LENGTH • ADAPTABLE TO ANY DRIVE



NOW!

SEE THE
DIFFERENCE

in
**HORTON
CHUCKS**

New plastic demonstrators show the advantages of Horton's Famous Five Extras.

1. Exclusive pilot hole construction
2. Chrome nickel steel scroll heat-treated to 40-45 Rockwell C
3. Exclusive replaceable pinion bushings
4. Self-contained operating screws
5. One-piece body construction

Now you can SEE these built-in extras in actual operation. Ask your Horton Distributor NOW!

**HORTON
CHUCK**

Windsor Locks, Conn.

Technical Briefs

Engineering

Reactor:

Uranium-bismuth liquid alloy may be used as power source.

A nuclear reactor system which could generate electric power, "breed" new fuel for itself, and deliver by-products to waste tanks, all in continuous processes, has been recently designed by scientists of the Atomic Energy Commission's Brookhaven National Laboratory, Upton, N. Y.

The system, known as LMFR, (Liquid Metal Fuel Reactor Systems for Power) was described at the International Congress of Nuclear Engineering at the University of Michigan.

May Be Least Costly

While a number of problems of LMFR design have been worked out, others must await construction of an experimental reactor. It is believed a full scale LMFR may provide lowest cost electrical energy from fission heat.

LMFR would provide the first usage of a liquid metal alloy, in this case uranium-bismuth, as the fuel stream to inter-connect continuous processes. The uranium used would be of atomic weight 233, a variety, or isotope, capable of splitting, or fissioning, as does the more commonly known U235. Fission of the U233 atoms

IF YOU WANT MORE DATA

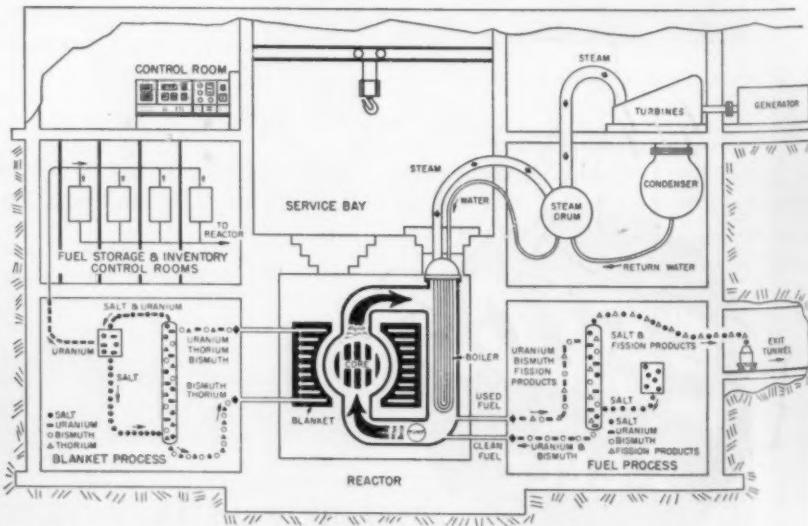
You may secure additional information on any item briefed in this section by using the reply card on page 113. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

would occur in the LMFR core, a perforated graphite sphere 5 ft in diam. In the process, atom fragments called neutrons would fly out, splitting other atoms, releasing more neutrons, and thus maintaining a chain reaction.

The chain reaction would depend upon the amount of U233 fuel present, and the shape and size of the graphite which moderates neutrons to speeds most favorable for fission.

Breeds Own Fuel

Excess neutrons from the fissioning U233 atoms in the core would be captured by the thorium in the surrounding blanket and form more U233. The unit is a breeder which would replace the fuel as it is destroyed. The new U233 would go to a storage tank. From there it would be fed back through the core when needed to generate additional power.



Liquid metal fuel reactor may offer cheaper power ...

Tooling:

Carbides speed up machining of parts from 1035 forgings.

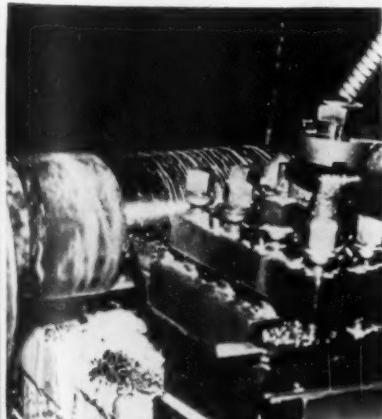
Use of special carbide tooling has simplified heavy-duty steel cutting operations on an AISI 1035 steel drive roller shaft at The Shovel Co., Lorain, O. The job has undergone a production face lifting to the extent that now machining time of the shaft is 25 pct faster.

Use of a different grade cemented carbide cutting tool turned the trick. The cemented carbide tool now employed is Carboloy grade 370 developed recently by Carboloy Dept. of General Electric Co. for heavy-duty steel cutting operations.

Machined From Forging

Heart of the Lorain, O. company's "crawler unit" that carries power shovels, cranes and other heavy equipment, the drive roller shaft furnishes power to the treads. The part is machined from a rough, heavily scaled hot-rolled forging of high carbon steel, AISI 1035, 2 ft long with 5½-in. outside diameter. Depth of cut is ½-in., feed 0.020 in. and speed 168 rpm. Job is done on a 48-in. flat bed horizontal lathe.

Until recently this job was one of the most troublesome in the shop.



Carbides speed cutting ...

Skilled and unskilled employees can use this superbly designed two-point contact gauge to make quick, accurate, *impersonal* inspections of small holes for size, taper and roundness.

The Ames No. 36 has extremely sensitive mechanism especially designed to eliminate "feel" in measuring. The spherical contact point automatically centers itself and indicates the true diameter at the point measured.

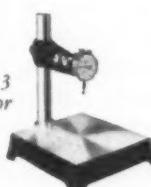
The operator has only to slide the contact in and around the hole and note the readings to determine if tolerances are being met.

The Ames Small Hole Gauge No. 36, using contacts in increments of 1/32", can check holes of 3/16" to 1" diameter, up to 2" depth. Longer lengths and special contacts to check irregular recesses, splines, etc., can be supplied.

Ames No. 15
Jaw Gauge



Ames No. 13
Dial Comparator



Ames No. 516
Dial Micrometer



Ames No. 25
Pocket Thickness
Measure



If you would like to have our recommendations on your measurement problem, send blueprints and specifications. Write for your free copy of catalog on Ames precision measuring instruments.

Representatives in
principal cities.

B. C. AMES CO.

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Mfgr. of Micrometer Dial Gauges • Micrometer Dial Indicators



THEY'RE READY TO GO TO WORK FOR YOU...



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SOMEWHERE in your business there is a need for the many diversified facilities, the engineering skills and the wide production experience of Thompson's SPECIAL PRODUCTS DIVISION.

Whether it's a question of design, research, development, product improvement, manufacture or source of supply . . . Thompson's SPECIAL PRODUCTS DIVISION provides full facilities for grinding, stamping, heat treating, machining, forging and many other operations. And Thompson's testing and inspection methods during every operation assure dependable accuracy for every product.

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NEW EQUIPMENT

New and improved production ideas, equipment, services and methods described here offer production economies . . . for more data use the free postcard on page 113 or 114.

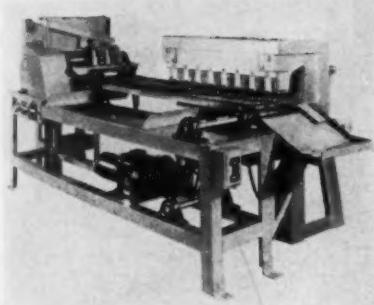


SlideHoning—a new approach to tumble finishing

SlideHoning equipment comprises a multi-barrel unit with a 48-in. revolving disk on which can be mounted up to 25 barrels with a variable rotating speed from 11 to 28 rpm. Different sizes and shapes of barrels plus a range of mountings are available. A combination of rotary, centrifugal and slide tumbling ac-

tions are possible all at one time. This controlled-motion-honing removes burrs, flash, tool marks, rust, paint, heat treating scale. Dimensional tolerances of the workpieces are not affected. One operator can do effective finishing on a variety of workpieces. *BMT Mfg. Corp.*

For more data circle No. 29 on postcard, p. 113.

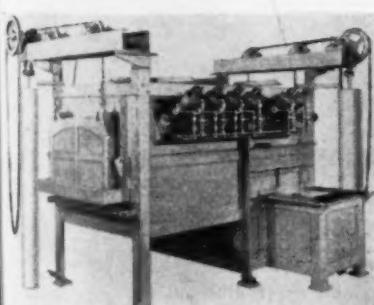


Automation used in bar stock heating

End-heating of bar stock for upsetting is put on a completely automatic basis with a new mechanical development designed for use with a Roto-Flame furnace. A mechanical hopper-feed unit is mounted at one end of the furnace conveyor, to automatically supply stock to the latter. Bars are then carried through the heat zone at a speed to

satisfy the desired heating cycle. Among features claimed for the equipment, which works on the high-speed or high-head heating principle, are: greater heating uniformity, plasticity in the heated metal, less scale, and production increase up to 100 pct with same labor. *Gas Appliance Service, Inc.*

For more data circle No. 30 on postcard, p. 113.

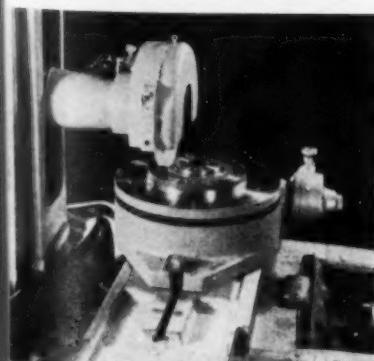


Aluminum melting furnace for diecast work

A dry hearth double-chamber melting furnace has been developed for quality melting, die casting, or permanent molding of aluminum parts requiring a minimum of porosity. Basic design consists of separate melting and holding baths in a single unit, eliminating use of containers. Furnace has a high melting

rate and uniform pouring temperature. Furnaces are available in 12 standard sizes up to 2000 lb per hr capacity, for gas, oil or combination gas-oil firing. Dip vestibules may be arranged for end, single-side, or double-side dip out. *Eclipse Fuel Engineering Co.*

For more data circle No. 31 on postcard, p. 113.



Rotary table for surface grinders, lapping plates

Vulcan's new rotary table is an inexpensive portable attachment for surface grinding of flanged studs or bushings, bearing spacers, forming rolls, convex or concave surfaces, flush pin gages, punches or dies. The table uses regular air line sources for power and attains variable speeds of 40 to 100 rpm. With the rotary table only the machine cross feed is used, reducing machine

error and producing time-saving precision grinding or fine micro finishes on tool or production items. The table can be used with standard permanent magnetic chucks or fixtures to suit the part. Vulcan lapping plates can convert the table into a portable or bench type lapping machine. *Vulcan Tool Co.*

For more data circle No. 32 on postcard, p. 113.

Turn Page

**POWER
PRECISION
PERFORMANCE**



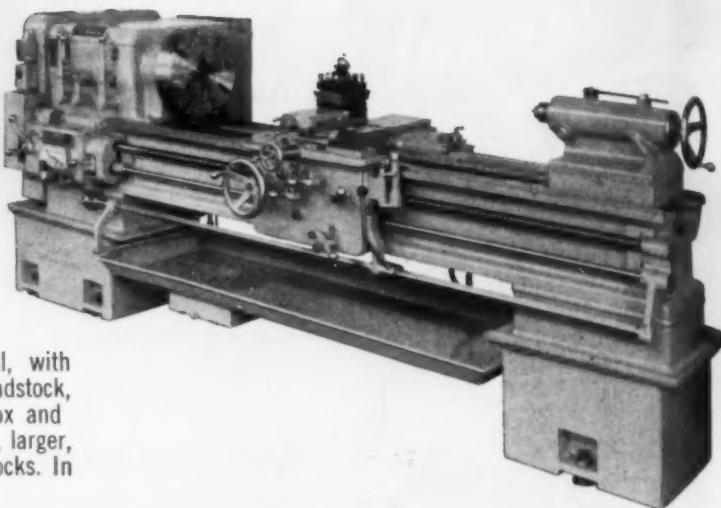
**Nebel
LATHES
CINCINNATI**



Removable Block Gap Lathes

16"/27", 20"/30", 25"/40" sizes

Nebel removable block gap lathes provide the flexible swing capacity of a gap lathe . . . plus all the advantages of an engine lathe. Made in three sizes, there's one that will fit your requirements perfectly.



Engine Lathes

16", 20", 25", 27", 32", 36" sizes

Now heavier, more substantial, with shaved and hardened gears in headstock, hardened gears in quick change box and apron. Timken anti-friction bearings, larger, heavier aprons, carriages and tailstocks. In short, more lathe for your money!



Extension Bed Gap Lathes

20"/40" and 28"/50" sizes

28"/50" Nebel 'G' series shown, swings 52" through the gap, 29" over the ways. Shaved and hardened gears and Timken bearings throughout headstock. Takes 15- or 20-hp motor. Also made in 20"/40" 'AG' series. Both series now heavier, more accurate, faster and more powerful.

For specifications and further information, see our catalog in Sweet's 1954 Machine Tool Catalog . . . or write

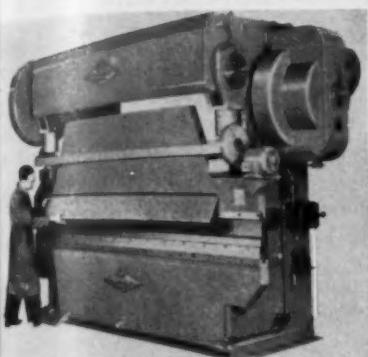
THE NEBEL MACHINE TOOL CO.

3415 Central Parkway

Cincinnati 25, Ohio

New Equipment

Continued

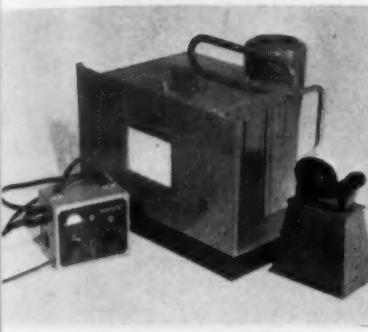


Production press brake exerts 70-ton pressure

Forming operations such as bending and corrugating, beading, seaming and wiring, punching, embossing and pressing are possible on the new Besco production press brake. The carefully designed frame of heavy welded and bolted rolled steel plate constitutes a massive unit of the strictest rigidity. Side frames cut from the solid and open ended to a depth of 8 in. accommodate

sheets of unlimited width; have 97½ in. between them, permitting sheets to be passed straight through the machine. Overall bed length is 126 in. Stroke of top beam is 3 in. and maximum die opening is 15 11/16 in. Strokes per minute are 35, flywheel speed is 530 rpm and load speed of the motor is 1440 rpm. *F. J. Edwards Ltd.*

For more data circle No. 33 on postcard, p. 113.

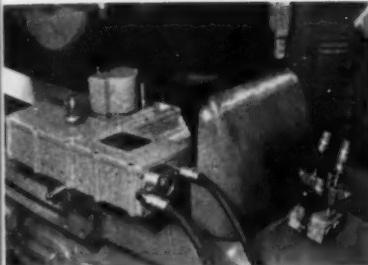


Industrial X-ray unit for inspection, control

New Norelco MG 60 fluoroscopy and radiography unit for industrial inspection, production control, and scientific purposes is self-contained, lightweight and easily portable. Useful for X-ray examination of objects made from light metal, rubber, plastics, porcelain and glass, the unit detects metallic foreign matter and locates contact parts and

connectors in insulating materials. It is designed for continuous operation and is suitable for mass production applications. The fluoroscopy box facilitates examination of small objects. Radiographs can be taken directly on the object or in the fluoroscopic box. *North American Philips Co.*

For more data circle No. 34 on postcard, p. 113.

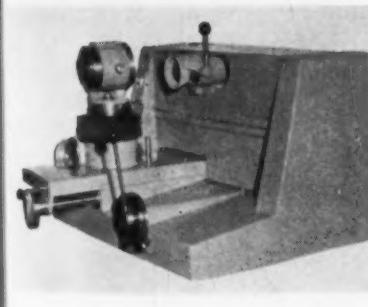


Wheel dresser especially for surface grinders

Fast, accurate, automatic contour dressing is claimed for the new Model 32 grinding wheel dresser. Almost any desired contour that can be entered by a diamond can be dressed into the grinding wheel with the accuracy of tenths. Dressers feature a continuous uninter-

rupted cut across the wheel, producing a perfect blend of all radii and tangents. Little skill is necessary to set up and operate the dresser. Operator removes cover plates, changes contour templates. *Hoglund Engineering & Mfg. Co.*

For more data circle No. 35 on postcard, p. 113.

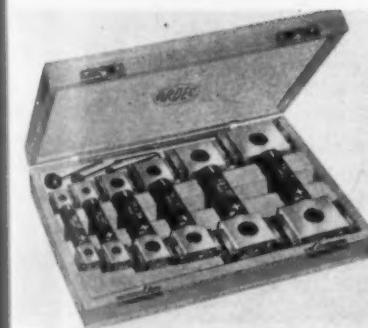


Cutter grinder handles average shop requirements

Designed for cutter grinding only, the new Model RK-2 tool and cutter grinder will handle practically all the tool and cutter grinding requirements in the average shop. On the new grinder the work remains stationary and the grinding wheel moves. This eliminates the usual tables and makes possible a com-

pact machine with all controls grouped within easy reach of the operator. Grinding wheel spindle floats on anti-friction bearings which are totally enclosed so that no grinding dust can possibly reach the moving parts. *McDonough Manufacturing Co.*

For more data circle No. 36 on postcard, p. 113.



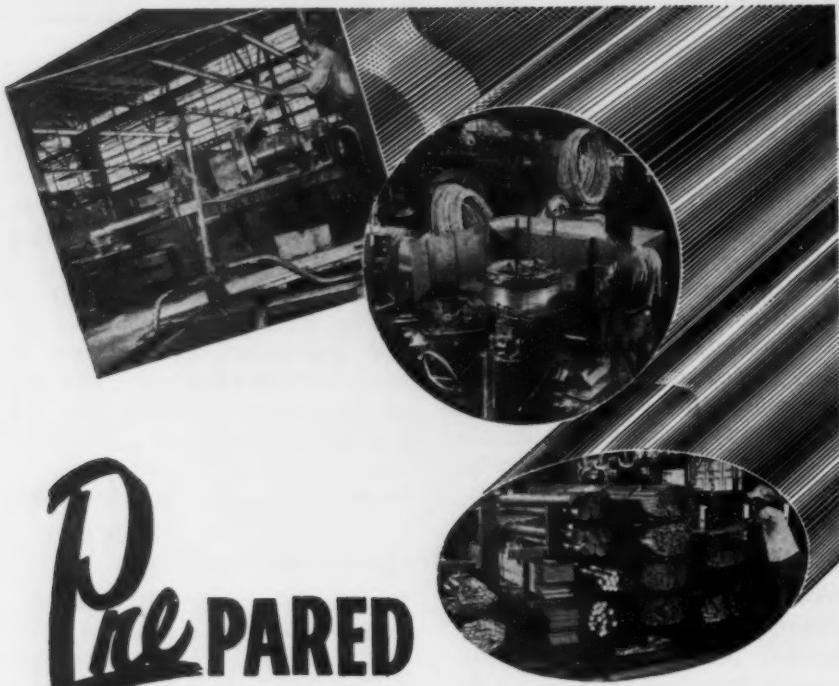
Adjustable jaws permit wide measuring range

A total range from 0.708 to 2.835 in. is now possible with just six adjustable go and not-go gages. These Ardec gages can be set quickly with micrometer, indicator or Johansson block, depending on accuracy required. Long jaws of the adjustable gage permit straight entering. Blind holes can be measured to their full depth as easily as through holes.

After setting the gage, it can be locked and wax-sealed to prevent tampering. These instruments are used for production, quality control, inspection and for measuring single boring operations, replacing telescope gage and micrometer. Sold in sets or individually. *Ardec, Inc.*

For more data circle No. 37 on postcard, p. 113.

Turn Page



ON A PRODUCTION BASIS TO GIVE YOU:

1. Bright, smooth surfaces to close tolerances . . .
2. Uniform straightness of bars
3. Greatly improved machinability
4. Minimized warpage or distortion
5. Fewer additional machining or grinding operations

WYCKOFF COLD FINISHED STEEL BARS

CARBON . . . ALLOY . . . LEADED



Enjoy these and other cost saving advantages by standardizing on Wyckoff Bars—our metallurgical staff will be glad to cooperate with you in selecting the best grade of steel for your particular requirements.

WYCKOFF STEEL COMPANY

General Offices: Gateway Center • Pittsburgh 30, Pa.

Branch Offices in Principal Cities

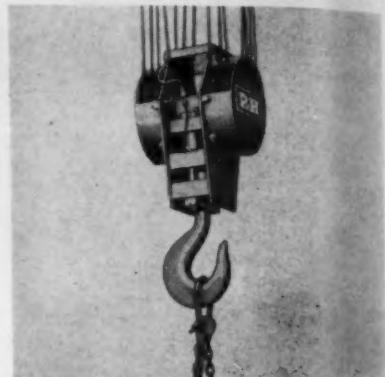
Works: Ambridge, Pa. • Chicago, Ill. • Newark, N.J. • Putnam, Conn.

New Equipment

Continued

Electronic crane scale

Hook-a-Weigh is an electronic weighing device for overhead cranes and provides accurate weighing service for any type of load while it is being handled. Saves time and costs; often eliminates separate weighing operation with products moving directly from one phase of production



to the next without stopping. An electric signal is transmitted through a cable and cable reel to a recording instrument which may be visual or recording type mounted in the crane cab or other location. Hook-a-Weigh may be used on any crane and is available in capacities up to 200,000 lb. *Harnischfeger Corp.*

For more data circle No. 38 on postcard, p. 111.

Pressure lubricator

Automatic high pressure grease or heavy oil lubricator offers a simple, inexpensive method of supplying one, or more bearings from one centrally located lubricator through a single pipe line. It is ruggedly constructed of solid cast bronze for adaptation to outdoor conditions



and installations. Operation is through a coil spring pressure controlled by a moving piston with a metering pin to maintain a uniform flow as the spring expands. Visual telltale extending rod shows when refilling is required and indicates flow of grease or oil. *Bronze Bearings, Inc.*

For more data circle No. 39 on postcard, p. 111.

Turn Page

RAM TYPE TURRET LATHES



NO. 2 ALL-GEARED HEAD
1" Bar Capacity
14" Swing

NO. 3 UNIVERSAL
1½" Bar Capacity
15¾" Swing

NO. 4 UNIVERSAL
2" Bar Capacity
18½" Swing

NO. 5 UNIVERSAL
2½" Bar Capacity
20" Swing

ELECTRO-CYCLES



NO. 1 ELECTRO-CYCLE
5/8" Bar Capacity
11" Swing

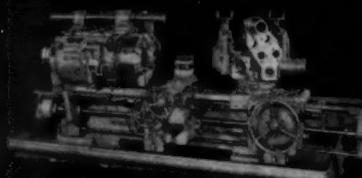
NO. 2 ELECTRO-CYCLE
1" Bar Capacity
14" Swing

NO. 3 ELECTRO-CYCLE
1½" Bar Capacity
15¾" Swing

16" ELECTRO-CYCLE
1½" Bar Capacity
16¾" Swing

SADDLE TYPE TURRET LATHES

Heavy Duty



1-A UNIVERSAL
2½" or 3" Bar Capacity
16¼" Swing

2-A UNIVERSAL
3½" Bar Capacity
20" Swing

3-A UNIVERSAL
4½" or 6" Bar Capacity
23½" Swing

4-A UNIVERSAL
8" 9" or 12" Bar Capacity
28½" Swing

MULTI-SPINDLE AUTOMATICS



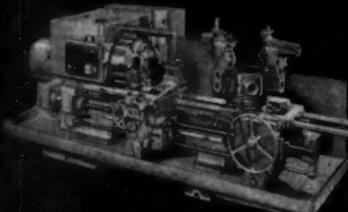
6-SPINDLE BAR MACHINE
3/8" or 1½" Bar Capacity

5-SPINDLE
CHUCKING MACHINE
6" Swing

5-SPINDLE BAR MACHINE
1½" Standard Bar Capacity
2½" Oversize Capacity

SADDLE TYPE TURRET LATHES

Extra Heavy Duty



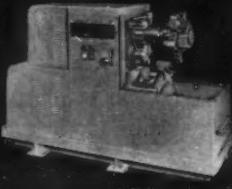
1-A UNIVERSAL
2½" or 3" Bar Capacity
16¼" Swing

2-A UNIVERSAL
3½" or 4½" Bar Capacity
20" Swing

3-A UNIVERSAL
4½" or 6" Bar Capacity
23½" Swing

4-A UNIVERSAL
9" or 12" Bar Capacity
28½" Swing

SINGLE SPINDLE AUTOMATICS



1 AC CHUCKING MACHINE
8" or 10" Chuck — 6" Working Stroke

2 AC CHUCKING MACHINE
10" or 12" Chuck — 9" Working Stroke

PRECISION TAPPING AND THREADING MACHINES



NO. 10
TAPPING MACHINE
0-80 to 10-24 Capacity

NO. 11
TAPPING MACHINE
8-36 to 7/8" Capacity

NO. 11 RS RADIAL (Single Head)
NO. 11 RD RADIAL (Double Head)
8-36 to 7/8" Capacity

NO. 12
TAPPING MACHINE
7/8" to 2½" Capacity

When the going gets tough
...put it on a
WARNER & SWASEY



YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

New Equipment

Continued



Attachment makes wide pads of weld deposit

New automatic welding equipment produces beads up to 4 in. wide in a single pass. Called Spreadarc, the attachment mounts on a standard Lincolnweld automatic head and oscillates the head back and forth at right angles to the direction of travel. Amount of oscillation can be controlled. The unit may be used to build up a layer of hardsurfacing metal or to build up with mild steel.

Spreadarc is powered by its own variable speed electric motor which through an eccentric oscillates the entire welding head assembly. Speed and width are controlled to meet varying requirements. Spreadarc may be turned off completely when normal straight welding beads are desired. *Lincoln Electric Co.*

For more data circle No. 40 on postcard, p. 113.

Color marking

Improved hot stamping machine is adjustable lever operated, with an automatic adjustable roll leaf feed, adjustable stroke and ample working area for special stamping fixtures, special parts, large parts. A

When Electro-Cleaning..

..get ALL these results!

1. **FAST, EFFECTIVE CLEANING** insured by the ability of the cleaning solution to carry high current densities.
2. **MINIMUM CLEANING COSTS** resulting from long-lived cleaning solutions.
3. **FLEXIBLE OPERATION** from the use of a cleaner that can be employed for either anodic or cathodic cleaning.
4. **DOUBLE-ACTING RESULTS** from a cleaner that works chemically as well as electrolytically.
5. **NO ATTACK ON METALS** by making sure that your cleaner is safe for the metals you process.

Magnus makes a complete line of Electro-Cleaners. You can get ALL these results on *your* work by using the Magnus material that has demonstrated its superiority on aluminum, soft metals, die cast, steel or combinations of any of these metals.

The Magnus laboratory is always ready to make test runs on your particular metal units to determine which Magnus Electro-Cleaner is best suited to your work.



MAGNUS CHEMICAL CO., INC.

46 South Ave., Garwood, N. J.

In Canada—Magnus Chemicals, Ltd., Montreal
Service Representatives in Principal Cities

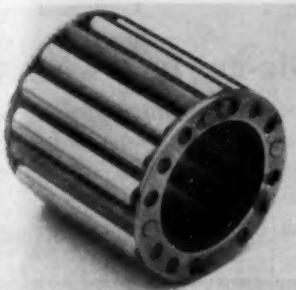


sealed tubular cartridge heating element in the head provides the heat. Heat is regulated by a dial thermometer mounted in the head. An opening in the back of the press permits the work to be run through in a left to right or backward to forward manner. Names and addresses as well as sizes, job numbers, grades and quality designations are readily stamped. *Acromark Co.*

For more data circle No. 41 on postcard, p. 113.

Steel cage bearing

This steel cage type roller bearing supports heavy loads within a small area. It is a self-contained unit that can be used without an inner or outer race. The bearing can be used directly on a hardened



shaft or sleeve and in a hardened housing. It also can be installed directly in the bores of hardened gears or housings of extremely limited boundary dimensions and, by running directly on a hardened shaft, can support fairly heavy bearing loads. Bore sizes range from $\frac{3}{8}$ to 4 in. *Rollway Bearing Co.*

For more data circle No. 42 on postcard, p. 113.

Automatic carrier

New automatic carrier with roll-over bucket was built for intermittent transfer of bulk materials between a single loading point and any number of discharge stations. It consists of a standard twin-hook electric hoist for raising and lower-



ing the special bucket equipped with casters for manual positioning on the floor. The bucket is mounted on a rigid frame with one end geared to an electric motor which turns the bucket one complete revolution at the discharge point. Electric controls for automatic dispatch, station selection, and manual operation are also carried on the unit. *American MonoRail Co.*

For more data circle No. 43 on postcard, p. 113.
Turn Page

NOW! GRAND RAPIDS UNIVERSAL CUTTER AND TOOL GRINDERS



*are on
improved
delivery
schedules*

It's true, they have been hard to get because every model offers extra value.

The Model 62, for instance, features four-speed spindle drive, universal positioning of elevating hand wheel, anti-friction ways, more vertical capacity, longer swing, one-shot lubrication system.

The many other Grand Rapids Cutter Grinders are also on improved delivery schedules. Send coupon for complete information.

• GET THE FULL STORY ON ALL THE ADVANTAGES



GALLMEYER & LIVINGSTON CO.
400 Straight Ave., Grand Rapids, Mich.

Please send me the following literature without obligation:

- Cutter and Grinder Literature
 Surface Grinder Literature

NAME _____

POSITION _____

FIRM _____

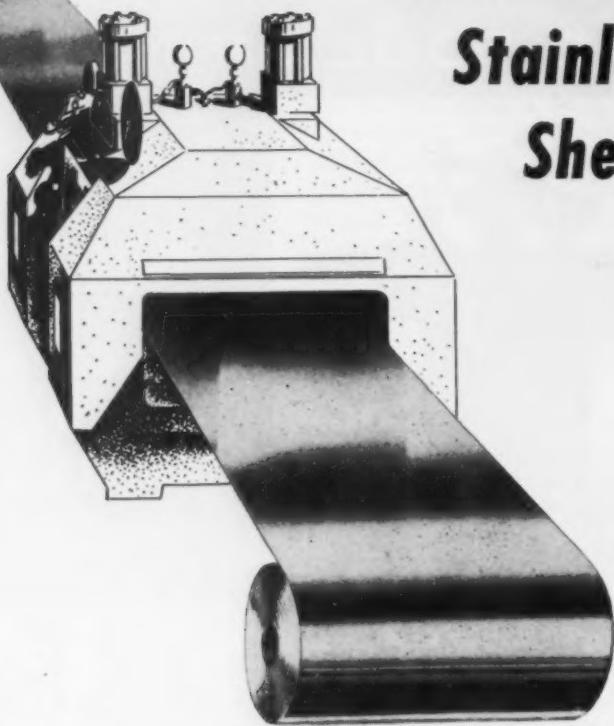
FIRM ADDRESS _____

We'll answer within twenty-four hours



regular use of...

MicroRold® Stainless Sheets



SAVES MONEY!

Stainless sheets are usually ordered by gauge number—with permissible A.I.S.I. thickness variation of plus or minus 10%—but are sold on a weight basis. Thus, you may order 18 gauge, needing about .0475" thickness, and receive .052" thickness. But Micro Rold may be held to a 3% plus or minus tolerance; and you may order by gauge number, specifying that it be rolled on the "light side" of the gauge range. While these savings may not be apparent in every single sheet of MicroRold, the weights will average less than the theoretical when figured over a period of time. These savings can be substantial in your annual profit picture.

Washington Steel
Corporation

WASHINGTON, PENNSYLVANIA

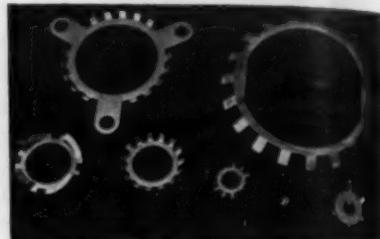


—New Equipment—

Continued

Die-cut lock washers

Special custom made die-cut lock washers are produced in small lots without the cost of conventional blanking and piercing dies. They can be made from practically any

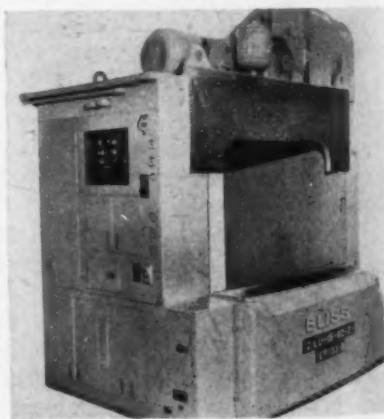


sheet metal stock, including cold rolled steel, spring bronze, spring steel and any other sheet alloys. Lock washers for shaft sizes from $\frac{1}{8}$ to 6 in. are available. *Dayton Rogers Mfg. Co.*

For more data circle No. 44 on postcard, p. 111.

Welding press

All piping, controls and wiring are located inside the streamlined frame of a new welding press. Accessibility has been maintained while affording greater protection to operating controls. Used for high-speed, automatic assembly of large metal sections, the



welding presses are available in four sizes with underdrive and conventional drive arrangements. Beds are 12 in. deep with widths ranging from 42 to 84 in. Strokes are 8 and 10 in. or 8 and 12 in. Driving unit can be in the base for shops with limited headroom. *E. W. Bliss Co.*

For more data circle No. 45 on postcard, p. 111.

IS YOUR STOCK OR STORAGE AREA in

3rd DIMENSION

HEAVY-DUTY FORK
LIFTTRUK

5 - 7½ - 10 - 15 ton
CAPACITIES



You have your width and depth for storage and shipping areas — that's pretty much controlled — a systemized layout of stacking aisle and "unitizing" will improve efficiency — BUT —

Are you taking full advantage of that Third Dimension — HEIGHT?

A'Silent Hoist' LIFTTRUK designed for heavy-duty capacity loads, will stack your materials, parts, finished products, etc., and add many feet of usable space above your normal stacking height. You can actually add acres to your warehouse, without adding a single foot of floor area! And the LIFTTRUK will speed outloading at least 3 times as fast as "partload" or "lightload" methods. Write for convincing facts —

SEND FOR FREE BULLETIN NO. 77

SILENT HOIST also offers other heavy-duty Materials Handling Equipment . . . including LIFT-O-KRANE, a Combination Boom Crane and Fork Lift, with separate power winch . . . write us about

LIFT-O-KRANE

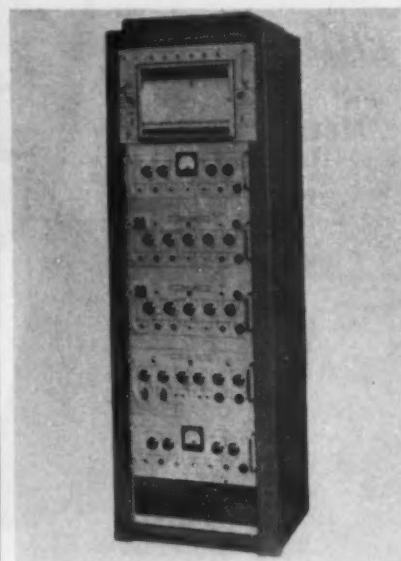
SILENT HOIST & CRANE CO.
Pioneers of Heavy Duty Materials Handling Equipment
851 63rd STREET BROOKLYN 20, N.Y.

New Equipment

Continued

Oscillographs

New multichannel direct writing oscillographs feature four and six channel systems. An electronically controlled chart drive system permits instantaneous speed selection.

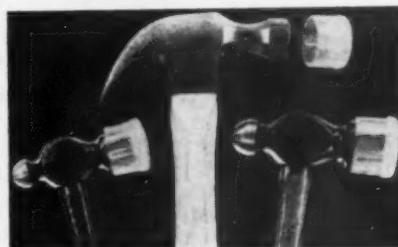


Total range of 16 accurate chart speeds is possible from 1 cm per hr to 250 mm per sec. All speeds are selected with a front panel control or with an accessory remote control unit. Both ink writing and combination ink and electric writing units are available. *Brush Electronics Co.*

For more data circle No. 46 on postcard, p. 113.

Nylon hammer-head cap

Tough injection-molded nylon hammer-head cap fits all standard ball peen and claw hammers, old and new. It makes any hammer suitable for working on metal, wood, glass,



plastic. It will not chip and makes a soft nonmarring hammer head. Cap does not interfere with balance of hammer and completely eliminates rebound, handle vibration, and sting. *Lemco Automotive, Inc.*

For more data circle No. 47 on postcard, p. 113.

Turn Page

STAR
UNBREAKABLE
HIGH SPEED STEEL
POWER BLADES



For superior cutting performance with safety, insist on Star Unbreakable High Speed Steel Flexibles. No premium price for safety, fast cutting and long life.

They are made with a high speed steel toothed edge, welded by a special process to a flexible steel back. Eliminate tearing along weld—shattering—flying pieces.

Order Star High Speed Steel Flexibles from your Star distributor. And remember, he carries the leading lines of all kinds of tools and industrial supplies. And on extra-difficult metal sawing problems, he will quickly get a Star factory representative to help you.

Sold Only Through Recognized Distributors.

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CLEMSON BROS., Inc.

MIDDLETON, N. Y., U.S.A.
Makers of Hand and Power Hack Saw
Blades, Frames, Metal and Wood Cutting
Band Saw Blades and Clemson Hand and
Power Lawn Machines.

"I'm proud to be a Savings Bonds salesman for Uncle Sam..."

CHARLES M. WHITE

President
Republic Steel Corporation



"I'm proud to be a Savings Bonds salesman for Uncle Sam and I urge every business executive in the nation to advance the cause of American enterprise in this way.

"Every one of us at Republic Steel is proud of the results of our Payroll Savings campaign: 96.7 per cent of our employees saving systematically from each pay in U. S. Savings Bonds. These results were possible only because all 68,344 of us at Republic were part of an enthusiastic team. We feel that this is the best way we can demonstrate our appreciation of the efforts to have a sound dollar and a stable economy."

- 96.7% of Republic Steel's 68,344 employees—over 66,000 men and women—are enrolled in the Payroll Savings Plan.
- These 66,000 members of Republic's "enthusiastic team," as Mr. White so aptly terms them, are investing more than \$16,000,000 per year in U. S. Savings Bonds.
- In addition to building personal security, these men and women of Republic are making a very important contribution to America's "efforts to have a sound dollar and a stable economy."

Certainly Republic Steel's Payroll Savings record is outstanding—one of the best in the country. But it is not unique. Other companies have comparable records, measured in percentage of employee participation, or in annual Savings Bond purchases.

In every company with a high percentage Payroll Savings Plan you will find that the president or top executive appreciates the importance of the Plan and what it means

to personal and national security. He knows that 45,000 companies have Payroll Savings Plans . . . that 8,000,000 employees of these companies are investing more than \$160,000,000 per month in Savings Bonds . . . that the cash value of Savings Bonds held by individuals today is more than 36 billion dollars—and rapidly mounting, thanks largely to the steadily increasing family of Payroll Savers. He is 100% behind his company's Payroll Savings Plan, and everybody in the company knows it. He takes personal pride in watching employee participation grow to 60%, 70%, 80%, or, perhaps, the high 90's.

If you are not making this important contribution to America's effort for a sound dollar and a stable economy, a wire or letter to Savings Bonds Division, U.S. Treasury Department, Washington, D. C., will bring prompt cooperation from your State Director. He will show you how easy it is to join Mr. White and thousands of other executives as a Savings Bond Salesman for Uncle Sam, with a company Payroll Savings Plan that you can be proud of.

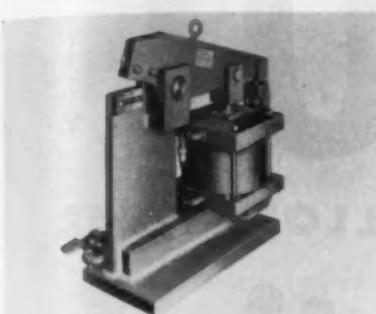
The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

The Iron Age



New Equipment

Continued



Aluminum cleaner

Marking ink on aluminum can be quickly removed by soaking rather than hand wiping or solvent degreasing. New soak tank cleaners, Vanrol 5617-A and B, besides quickly removing heavy, oily soils, can remove marking inks that have penetrated into porous oxidized aluminum surfaces. The cleaners, mixed 8 oz per gal and brought to a rolling boil, reportedly clean in 10 to 20 min. *Van Straaten Chemical Co.*

For more data circle No. 49 on postcard, p. 113.

Pallet truck

Single face pallets, double face pallets and skid platforms can be handled with a new lightweight hydraulic pallet truck, manufactured to carry 2000 lb loads with a minimum of dead weight. Lightweight rugged construction and ball bearings in both front and rear wheels make the truck ex-



tremely easy to move empty or loaded. Sealed bearings or self-lubricating bronze bushings are used throughout. Hydraulic lifting pedal is located at the operator's right foot for convenient pumping. The truck is made in 6 fork lengths, from 32 to 60 in. and in 6 widths, from 18 to 30 in. *Lewis-Shepard Products, Inc.*

For more data circle No. 50 on postcard, p. 113.

Air-operated shear cuts bars to 1 1/4 in. diameter

New air-operated shear for cutting cold ferrous and nonferrous bars up to 1 1/4 in. diam operates from any standard shop air supply or compressor at pressures from 60 to 125 psi. It has no motors or gears to maintain, and with practically no wearing parts, a minimum of maintenance is required.

It operates only while cutting, offering economy and safety features. The air shear Model A has 6 knives, with 4 cutting edges which can be adjusted by set-screws after grinding. Shear is operated by a foot treadle. *Curry Air Shear Corp.* For more data circle No. 48 on postcard, p. 113.



DIFFERENTIAL PRODUCTS INCLUDE:

Locomotives, mine cars, mine supply cars, rock laries, mantrip cars, air dump cars, dumping devices and complete haulage systems.

Over a quarter century ago the first (and original) double-trunnion dump car was placed in service by Differential on the L & N. Sound engineering and careful workmanship were such that this car is still in service — still earning money for its owners.

Such details as hardened, self-lubricating pins in door mechanisms, rolled steel weldments instead of castings (making repairs easier when repairs are necessary)—these are examples of details that put Differential in the lead more than 25 years ago — and keep it there!

Send for Bulletin 56 and get more information on this pioneering air dump car.

DIFFERENTIAL STEEL CAR COMPANY

FINDLAY, OHIO

SINCE 1915 — PIONEERS IN HAULAGE EQUIPMENT

new RY CUT

LEADED FREE-MACHINING ALLOY STEEL

ups production 25% to 200%

It's the lead — finely dispersed throughout the steel—that makes Rycut the best series of alloy steels for overall machinability.

(Faster machinability)—The lead addition provides alloy steels with the machinability of free machining carbon steels. Tools run cooler, stay sharper, last as much as 300% longer. And, because tools stay sharp longer, closer tolerances are obtained, with lowered tool costs. Customers report production increases as high as 200% over comparable standard AISI analyses.

(Mechanical properties unaffected)—The addition of lead has no known effect on the mechanical properties of Rycut alloys nor response to heat treatment. Hardenability falls within the same range as corresponding AISI analyses. Rycut, particularly in the heat treated condition, shows its superior machinability over standard heat treated alloys.

The lead in Rycut reduces the co-efficient of friction on turning 10% to 15%. With less drag

on the tool and less tendency to wear, a smoother, brighter finish is obtained. Rycut alloys produce a better finish at higher speeds than AISI analyses.

So, for better quality parts, machined faster with fewer rejects, use Rycut alloys. To get further information on these great new cost-cutting steels—or to order test quantities—call or write Ryerson now. Bulletin 14-5 on request.

The Rycut Series

Rycut 20	—.20 Carbon, Leaded Alloy Steel
Rycut 40	—.40 Carbon, Leaded Alloy Steel
New Rycut 50	—.50 Carbon, Leaded Alloy Steel
Rycut 47	—.47 Carbon, Leaded Alloy Steel*

*In Eastern Plant

LEADED CARBON STEELS

We also have complete stocks of Ledloy—the amazingly fast cutting, open hearth steel. See Ryerson Stock List or write for bulletin.



RYERSON STEEL

Principal products: Bars, structurals, plates, sheets and strip, mechanical tubing and boiler tubes, alloy and stainless steel, reinforcing bars, machinery & tools, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • CLEVELAND
DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

THE IRON AGE SUMMARY...

- ◆ Manufacturers facing problems on wages and prices
- ◆ Finished Steel Composite Price up \$3.24 per ton
- ◆ Ingot rate slips 3 points; scrap dips fifth week

Costs . . . Two major problems confront many of the nation's metalworking companies as a result of the increases in steel wages and prices.

They will have to decide what to do about their own wages. And they will have to decide whether to absorb the cost of the steel price increase or try to pass it on to their customers in a highly competitive market. It's a very tough decision to make.

Wages . . . The wage problem is the more serious because it will cost metalworking companies more. Many companies will face very strong pressure to follow the "pattern" of the steel wage agreement, which provides a 5¢ per hr wage increase and improvements in pensions and insurance bringing the total cost of the "package" to 10¢ to 12¢ per hr.

Prices . . . Steel consumers will have to pay an average of about \$3.25 a ton more for their steel. The price increases are on a selective basis due to varying amounts of labor required to produce them. Some products are increased by \$2.50 a ton; some by as much as \$6 a ton.

Although not all producers have yet announced higher prices, it is estimated that THE IRON AGE Finished Steel Base Price Composite will rise \$3.24 a ton to \$95.92 per net ton. (This price

composite is a weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strip)

It is estimated that the price increases will raise the steel bill of the nation's manufacturers by more than \$225 million on an annual basis.

Production . . . Steelmaking operations this week are scheduled at 64.5 pct of rated capacity, 3 points lower than the previous week. The relatively low rate is due largely to the Fourth of July holiday. July is expected to be a slow month due to (1) shutdowns for vacations by many steel consuming plants, and (2) over-ordering by some steel consumers during June.

The market is expected to show improvement in August. And by fall a fairly strong upturn is likely. However, strike hedge buying was not widespread and there are few order cancellations.

Scrap . . . Steelmaking scrap prices edged down again for the fifth week in a row. Declines this week lowered THE IRON AGE Steel Scrap Composite Price 17¢ a ton to \$26.75 per gross ton. Start of the traditional vacation found the market completely dead.

Steel Output, Operating Rates

	This Week†	Last Week†	Month Ago	Year Ago
Production (Net tons, 000 omitted)	1,597	1,746	2,208	
Ingot Index (1947-49=100)	99.4	108.7	137.5	
Operating Rates				
Chicago	68.5	79.0	84.0	98.5
Pittsburgh	69.0	69.0	70.0	96.0
Philadelphia	55.0	57.0	59.0	97.5
Valley	64.0	64.0	69.0	96.0
West	75.5	77.0*	84.0	100.0
Detroit	50.0	36.0	95.0	87.0
Buffalo	61.0	67.5	67.5	106.5
Cleveland	62.0	63.0*	66.0	90.0
Birmingham	76.0	76.0	78.0	101.0
S. Ohio River	71.0	82.5	86.0	85.5
Wheeling	95.0	95.0*	92.0	100.0
St. Louis	65.0	65.5	72.5	85.0
East	50.0	50.0	60.5	77.0
	64.5	67.5	72.5	95.0

Aggregate

* Revised. † Tentative

Prices At A Glance

(cents per lb unless otherwise noted)

This Week	Week Ago	Month Ago	Year Ago
-----------	----------	-----------	----------

Composite prices

Finished Steel, base	4.796	4.634	4.634	4.634
Pig Iron (gross ton)	\$56.59	\$56.59	\$56.59	\$56.76
Scrap, No. 1 hvy (gross ton)	\$26.75	\$26.92	\$28.25	\$43.83

Nonferrous

Aluminum, ingot	21.50	21.50	21.50	20.50
Copper, electrolytic	30.00	30.00	30.00	29.875
Lead, St. Louis	13.80	13.80	14.05	13.30
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin, Straits, N. Y.	96.375	96.50	93.75	82.75
Zinc, E. St. Louis	11.00	11.00	11.00	11.00

50 Auto Blocks An Hour!

WITH THE HELP OF
LUDLUM

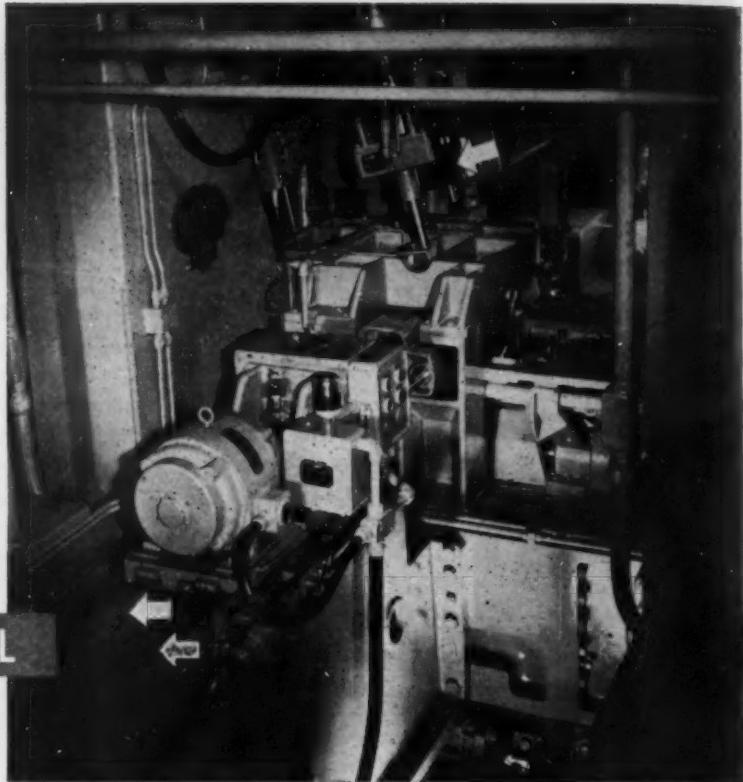
SARATOGA TOOL STEEL

Write for
BLUE SHEET ON SARATOGA



This concise four-page folder gives all needed handling and shop treatment details on Saratoga. Included is certified laboratory information on physical characteristics, and complete data on forging, annealing, hardening, tempering, etc. Ask for your copy.

Address Dept. A-55



Ludlum Saratoga was used for the steel ways (note arrows, above) of this giant unit, illustrated at left in a bird's-eye view reduced to miniature size.

98 SEPARATE OPERATIONS are carried on by this versatile machine which turns out 50 V8 auto engine blocks an hour. It consists of 18 machining units, each of which is fitted with hardened and ground steel ways of Ludlum Saratoga to guarantee accuracy in production.

MILLING, TREPANNING, DRILLING, counterboring, reaming, chamfering, automatic inspection of holes for depth and removal of chips are the operations performed by this amazing mechanism.

LUDLUM SARATOGA WAS USED BECAUSE its extreme hardness, high resistance to wear, and excellent machinability more than met the customer's high requirements for maintaining accuracy in this huge, multi-station machine.

ALLEGHENY LUDLUM METALLURGICAL SERVICE can solve your tool or die steel problems. • Call your local A-L representative or distributor today, or write *Allegheny Ludlum Steel Corporation, Oliver Bldg., Pittsburgh 22, Pennsylvania.*

For complete **MODERN** Tooling, call
Allegheny Ludlum

W&D 5155



Steel Product Markets

See Slump Now, Pickup in August

Fabricators' vacations plus upcoming lull of auto model changeovers depresses market . . . Price increases following the wage settlement not expected to affect sales.

The steel market faltered again this week as the predicted July slump began to take hold. While the outlook for August is a bit more optimistic, fabricator vacations are taking their toll this month.

The lull between new automobile models is also having an effect on the market, particularly in sheets and strip. Producers note that July business is down slightly from June. Next few weeks will determine whether there will be serious decline between models.

Stainless steel producers are not encouraged by preliminary reports from Detroit that auto manufacturers will likely be using less stainless in coming months. Indications are that plated carbon steel will be used more extensively in trim than previously, and die-castings also are being substituted for some stainless applications.

Higher steel prices resulting from the new labor agreement with the United Steelworkers are not expected to affect the market one way or another.

Peaceful settlement of negotiations brought no rush of cancellations immediately after the news was out, indicating that strike hedging was not significant.

SHEETS AND STRIP . . . A combination of vacation shutdowns and tapering off of automobile ordering is hurting the market this week. Pittsburgh producers report that July business is off slightly from June. Detroit notes a more decided drop and hints the situation may become more acute in the next several weeks. Chicago advised that while business off the decline is not as much as had been expected; some inventory absorption during July is expected, with a pickup in August. The gal-

PLATES . . . Lacking a long-overdue shot in the arm from railroad car builders, the market is struggling along at a fair but far from encouraging level. Consumers are ordering on a short-term delivery basis. The West Coast reports demand had steadied at lower levels, but new pipelines in the area may tighten the market. In the East, demand continues slow but slightly better than in first few months of the year.

STRUCTURALS . . . Market continues depressed on the West Coast. Chicago demand is good, with some out-of-area material coming into the district. July rollings in the Chicago area look good, but producers are quoting relatively short delivery. In the East, where highway and bridge construction is going full blast, solid demand through third quarter is looked for. Pittsburgh producers find the market is fair but could still accommodate more orders. Wide-flange beam demand is good and the long-range outlook even better. Inland Steel's plan to start production of wide-flange structural is the tip-off on future prospects for this market.

vanized sheet market continues strong. Tin plate producers report that July business is down from May-June, peak months, and look for further setbacks in August. The tin plate market appears to have shot its bolt during the first 6 months, but overall production for the year is expected to be only slightly less than in 1953. Stainless demand is still depressed. An exception to the general trend in tin plate is the West Coast, where an influx of breweries has stimulated demand to the point where consumption is pushing toward new highs.

TUBULAR . . . Reports from all producing centers indicate no signs of a letup in demand for oil country goods. Demand for merchant pipe is picking up, its strength apparently stemming from the building boom.

BARS . . . in Pittsburgh, the bar market continues soft in face of automotive disinterest. But Chicago reports that hot-rolled bars are holding up well at mill level. Cold finishers in the Chicago area look for a slump in July, are quoting 2-3 week delivery with spot tonnages moving quicker. Cold finished bar inventories in Chicago are high at the warehouse level, but other consumers apparently are working from low inventories. Detroit reports bar demand for July is off from June.

WIRE . . . Depending on where you sit, the wire market is either good or only so-so. Pittsburgh reports the market is off in all lines, although construction products are taking up some of the slack; merchant wire is off seasonally, and manufacturer's wire is down in July from June. Chicago market continues excellent, particularly in merchant products; there is no evidence of a buildup at the jobber level despite continued high rollings.

PIG IRON . . . Mystic Iron Works, of Boston has cut foundry and malleable pig iron price 25¢ per ton for third quarter. Foundry price is \$61 per gross ton, f.o.b. cars. Malleable price is \$61.50.

WAREHOUSE . . . Demand appears to be following the same pattern as at mill level. Detroit indicates that small consumers may be feeling effects of the summer slump more sharply than the bigger users. Detroit warehouses report business is slow and they look for no improvement until late summer. In Chicago the market is heading for a July drop, estimated by one source at approximately 10 pct.

Nonferrous Markets

Labor Pact Will Boost Aluminum Prices

Alcoa-USW talks on today . . . Settlement will follow steel pattern . . . How high prices go depends on markets . . . Labor peace bolsters metal markets—By R. L. Hatschek.

Signing of the 1954 wage agreement in the steel industry will have considerable effect on the nonferrous metal markets as well. Elimination of the strike threat, no matter how slim it might have been, also eliminates weakening factors in other metals since most products use a number of different materials.

Automotive industry, for instance, uses plenty of copper, aluminum and zinc in each car. Add the lead in its battery and the major nonferrous metals are all included.

But the biggest impact will be on aluminum. Wage negotiations between the United Steel Workers and Aluminum Co. of America were scheduled to begin today (July 8). Union demands—and the probable settlement—are expected to be based on the new steel contract. Other aluminum producers will follow the same pattern.

One major difference between aluminum and steel labor setups is that Alcoa workers are represented by five separate bargaining groups. Second largest of these is the Aluminum Workers International Union (AFL) which signed a 5-year contract in 1952. As modified last year, it provides

MONTHLY AVERAGE PRICES

The average prices of the major nonferrous metals in June, based on quotations appearing in THE IRON AGE were as follows:

	Cents Per Pound
Electrolytic copper, Conn. Valley	30.00
Lake copper, delivered	30.00
Straits tin, New York	94.193
Zinc, East St. Louis	10.962
Zinc, New York	11.462
Lead, St. Louis	13.906
Lead, New York	14.106

for a 5¢ wage improvement each year—and you can bet the USW wants as much. Steel labor got a 5¢ pay hike plus fringe benefits. So you can look for a nickel wage increase.

Aluminum Workers can reopen their contract and if USW wins more they will.

Expectation generally is that negotiations will be relatively quiet, that settlement will come without a strike. But the aluminum industry's labor bargaining position is stronger than it was last year when buyers were clamoring for metal.

ALUMINUM . . . If the settlement follows its probable path, aluminum prices will undoubtedly go up. True,

the market is quite easy—there wasn't even any noticeable strike-hedge buying of aluminum—but producers' tendency will be not to absorb higher costs.

ZINC . . . Already staggering under mountainous stocks, zinc producers' biggest fear was that galvanizing lines would be strikebound. It was the steel strike of 1952 that gave smelter stocks their first real shove toward present proportions. And galvanizers were staying away from the zinc market until the labor question was answered.

Late last week, with the new contract a fact, galvanizers returned to the market. Zinc producers reported heaviest selling of Prime Western grade they'd enjoyed in some time.

LEAD . . . With batteries the major factor in lead, peaceful settlement of labor talks had no direct effect on business. Sales have been fairly good lately on the usual seasonal upturn in battery makers' requirements.

On the tariff front, Sen. Pat McCarran, D., Nev., led 32 other Senators in urging President Eisenhower to boost import duties "to save the domestic lead-zinc mining industry from cheap imports." Sen. McCarran says he has learned that the secret Tariff Commission report to the President recommends increasing duties on the twin metals.

This had seemed likely since the Commission certainly wouldn't recommend a reduction and probably wouldn't send a secret report suggesting they be held at present levels. At any rate, the President must act on the report by July 21.

COPPER . . . Not that copper was easy, but the steel settlement assures continued firmness in the red metal market. Most sellers are out of metal for July delivery and others have only small quantities still available.

Only ominous note is the strike vote to be held July 18 by the International Union of Mine, Mill & Smelter Workers.

TIN . . . Final signing of the International Tin Agreement by all six producing countries and 14 of 18 consuming countries far overshadowed the impact of steel industry peace. But if the steel signing has any effect, it's slightly bullish.

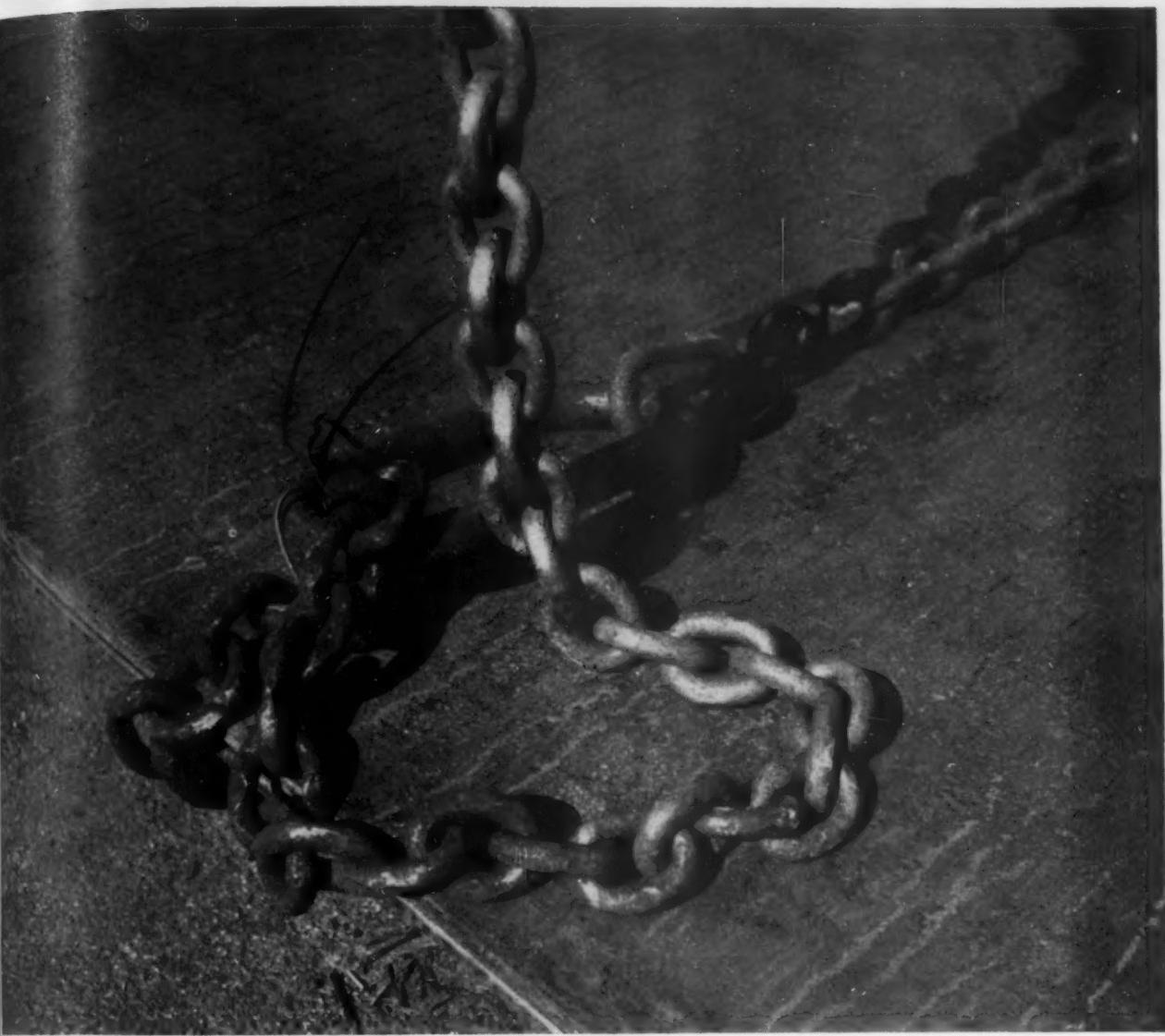
NONFERROUS METAL PRICES

(Cents per lb except as noted)

	June 30	July 1	July 2	July 3	July 5	July 6
Copper, electro, Conn.	30.00	30.00	30.00	30.00	....	30.00
Copper, Lake, delivered	30.00	30.00	30.00	30.00	....	30.00
Tin, Straits, New York	96.50	96.50	96.375	....	....	96.375*
Zinc, East St. Louis	11.00	11.00	11.00	11.00	....	11.00
Lead, St. Louis	13.80	13.80	13.80	13.80	....	13.80

Note: Quotations are going prices

*Tentative



Practically no chain reaction despite 10-years' pickling service

We've made this picture just as big as possible . . .

So that you could examine for yourself the reaction of this Monel® chain to its 10 years in and out of the hot sulfuric with heavy steel plate and fabrications.

As you can see there are some nicks and a little wear . . . but there's certainly no sign of corrosion. And it's obvious that this chain still has many years of life ahead.

There's another chain just like it in the same service. Both are made of $\frac{3}{4}$ inch hot rolled Monel, gas welded at the link joints.

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the strength of steel and even greater toughness. It resists corrosion by sulfuric, hydrochloric, and hydrofluoric acid solutions at pickling strengths and temperatures. That makes for thin sections, light weight, savings. Furthermore Monel is readily welded and fabricated. That saves money, too, and makes repair easy. (But as you see, repairs are few and far between.)

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extra capacity
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Nonferrous Prices

(Effective July 6, 1954)

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 30,000 lb, f.o.b. ship. pt. frt. allowed)
Flat Sheet: 0.038 in. and thicker, 2S, 2S, 38.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢; 0.081-in., 2S, 38.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢; 0.032-in., 2S, 38.3¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.
Plate, 1/4-in., and Heavier: 2S-F, 2S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.8¢.
Extruded Solid Shapes: Shape factors 1 to 6, 36.5¢ to 82.8¢; 12 to 14, 37.2¢ to 99.0¢; 24 to 26, 39.9¢ to \$1.29; 36 to 38, 47.2¢ to \$1.39.
Rod, Rolled: 1.064 to 4.5-in., 2S-F, 38.7¢; 43.8¢ to 37.2¢; cold-finished, 0.875 to 3.449-in., 2S-F, 38-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, 1/2 to 11/32-in., 69.6¢ to 47.0¢; 1/4 to 1 1/2-in., 46.6¢ to 43.8¢; 1/8 to 1/4-in., 42.7¢ to 39.9¢. Base 5000 lb.
Drawn Wire: Coiled 0.051 to 0.374-in., 2S, 44.1¢ to 82.4¢; 52S, 53.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.8¢.
Extruded Tubing: Rounds, 65S-T6, OD 1/4 to 2-in., 31.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 36.7¢ to 48.8¢.
Roofing Sheet: Flat, per sheet, 0.032-in., 42¢ x 60 in., \$2.888; x 96 in., \$4.548; x 120 in., \$5.680; x 144 in., \$6.816. Coiled sheet, per lb, 0.019 in. x 28 in., 30.8¢.
Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FS1-O 1/4 in., 56¢; 3/16 in., 57¢; 1/8 in., 60¢; 0.064 in., 78¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.
Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 1/2 to 1 1/4 in., 60.5¢; 1 1/4 to 1.749 in., 56¢; 2 1/2 to 5 in., 51.5¢. Other alloys higher. Base up to 1/4 in. diam, 10,000 lb; 1/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M, in weight per ft, for perimeters less than size indicated: 0.10 to 0.11 lb, 3.5 in., 65.8¢; 0.22 to 0.25 lb, 5.9 in., 62.8¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 82¢. Other alloys higher. Bass, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.
Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, 1/4 to 5/16 in., \$1.43; 6/16 to 1/2 in., \$1.29; 1/2 to 1 1/4 in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, 1/2 to 1 in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Bass, OD: Up to 1 1/4 in., 10,000 lb; 1 1/2 to 3 in., 20,000 lb; over 3 in., 30,000 lb.
Titanium
(10,000 lb base, f.o.b. mill)
Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$11; Bar, HR or forged, 16; Forgings, \$6.

Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

"A" Nickel	Monel	Inconel
Sheet, CR ...	85 1/2	67 1/2
Strip, CR ...	92 1/2	70 1/2
Rod, bar ...	82 1/2	65 1/2
Angles, HR ...	82 1/2	65 1/2
Plate, HR ...	84 1/2	66 1/2
Seamless tube, 115 1/2	100 1/2	90 1/2
Shot, blocks ...	60	137 1/2

Copper, Brass, Bronze

(Freight included on 500 lb)

Sheet	Rods	Shapes	Extruded
Copper ...	46.41	48.48	
Copper, h-r ...	48.38	44.73	
Copper, drawn ...		46.98	
Low brass ...	44.47	44.41	
Yellow brass ...	41.72	41.66	
Red brass ...	45.44	45.38	
Naval brass ...	45.76	40.07	
Leaded brass ...		39.11	
Com. bronze ...	46.95	46.89	
Mang. bronze ...	49.48	43.62	45.18
Phos. bronze ...	66.58	67.08	
Muntz metal ...	43.96	39.77	41.02
Ni silver, 10 pct	55.36	... 62.63	
Beryllium copper, CR, 1.9% Be, Base 2000 lb, f.o.b.			
Strip ...			\$1.68
Rod, bar, wire ...			1.65

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	21.50
Aluminum pig	20.00
Antimony, American, Laredo, Tex. ...	28.50
Beryllium copper, per lb conta'd be \$40.00	
Beryllium aluminum 5% Be, Dollars per lb contained Be	\$72.75
Bismuth, ton lots	32.25
Cadmium, del'd	\$1.70
Cobalt, 97-99% (per lb)	\$2.60 to \$2.67
Copper, electro, Conn. Valley	30.00
Copper, Lake, delivered	30.00
Gold, U. S. Treas., per troy oz.	\$35.00
Iridium, 99.8%, dollars per troy oz.	\$2.25
Lanthanum, dollars per troy oz.	\$165 to \$175
Lead, St. Louis	13.80
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig	27.00
Magnesium, sticks, 100 to 500 lb,	46.00 to 48.00
Mercury, dollars per 76-lb flask, f.o.b. New York	\$280 to \$285
Nickel electro, f.o.b. N. Y. warehouse Creek, Ont., contained nickel	63.08
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	56.25
Palladium, dollars per troy oz.	\$21.00
Platinum, dollars per troy oz.	\$84 to \$87
Silver, New York, cents per troy oz.	85.25
Tin, New York	96.375
Titanium, sponge, grade A-1	\$4.72
Zinc, East St. Louis	11.00
Zinc, New York	11.50
Zirconium copper, 50 pct	\$6.20

REMELTED METALS

Brass Ingots

(Cents per lb delivered carloads)

85-5-5 Ingots	
No. 115	27.00
No. 120	26.25
No. 123	25.75
80-10-10 Ingots	
No. 305	31.50
No. 315	29.25
88-10-2 Ingots	
No. 210	41.25
No. 215	37.75
No. 245	33.25
Yellow Ingots	
No. 405	23.25
Manganese bronze	
No. 421	26.75

Aluminum Ingots

(Cents per lb del'd 30,000 lb and over)	
95-5 aluminum-silicon alloys	
0.30 copper, max.	22.50-22.75
0.60 copper, max.	22.25-22.50
Piston alloys (No. 122 type)	20.00-21.25
No. 12 alum. (No. 2 grade)	19.25-19.75
108 alloy	19.75-20.25
195 alloy	21.00-21.50
13 alloy (0.60 copper max.)	22.25-22.50
ASX-679	19.75-20.25

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—96-97 1/2%	20.00-20.50
Grade 2—92-95%	19.00-19.50
Grade 3—90-92%	18.00-18.50
Grade 4—85-90%	17.00-17.50

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper	
Cast, oval, 15 in. or longer	42.64
Electrodeposited	41.88
Flat rolled	45.04
Brass, 80-20	
Cast, oval, 15 in. or longer	43.515
Zinc, flat cast	20.25
Ball, anodes	18.50
Nickel, 99 pct plus	
Cast	84.00
Cadmium	\$1.70
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn.	94%

Chemicals

(Cents per lb, f.o.b. shipping points)	
Copper cyanide, 100 lb drum	63.00
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, f.r.t. allowed	30.00
Nickel chloride, 375 lb drum	38.00
Silver cyanide, 100 oz. lots, per oz.	75 1/2
Sodium cyanide, 96 pct domestic	
200 lb drums	19.25
Zinc cyanide, 100 lb drum	54.30

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

Copper	26	25 1/2
Yellow brass	19 1/2	18
Red brass	23	22 1/2
Comm. bronze	23 1/2	22 1/2
Mang. bronze	18 1/2	17 1/2
Yellow brass rod ends	19 1/2	18

Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	27	27 1/2
No. 2 copper wire	25 1/2	25 1/2
Light copper	24	24 1/2
*Refinery brass	23 1/2	23 1/2
*Dry copper content	22 1/2	22 1/2

Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	27	27 1/2
No. 2 copper wire	25 1/2	25 1/2
Light copper	24	24 1/2
No. 1 composition	21 1/2	21 1/2
No. 1 comp. turnings	20 1/2	20 1/2
Rolled brass	17 1/2	17 1/2
Brass pipe	18 1/2	18 1/2
Radiators	17 1/2	17 1/2
Aluminum	17 1/2	17 1/2

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire	24 1/2-25
No. 2 heavy copper and wire	23-23 1/2
Light copper	21-21 1/2
New type shell cuttings	20 1/2
Auto radiators (unsweated)	15
No. 1 composition	19-19 1/2
No. 1 composition turnings	18 1/2-19
Unlined red car boxes	18
Cocks and faucets	16-16 1/2
Mixed heavy yellow brass	13
Old rolled brass	13 1/2
Brass pipe	17 1/2-18
New soft brass clippings	17 1/2-18

How

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Iron and Steel Scrap Markets

Scrap Stagnates in Summer Slump

Market enters vacation month asleep on its feet . . . Some evidence of levelling-off as composite dips only 17¢ to \$26.75 . . . Wage settlement has no immediate effect.

A thoroughly dull scrap market caught in the grip of a summer slump slipped gently last week and settled into a quiet bog of sales inactivity over the big holiday weekend.

Openhearth grades suffered a drop in Chicago to bring THE IRON AGE Composite down 17¢ to \$26.75. Pittsburgh prices remained steady with some optimism in the market for a firming-up in the future.

Labor settlement had no apparent effect on Philadelphia's scrap market. Further expectations of export business seemed the only evidence of activity in steel grades along the East Coast.

Price slide on openhearth grades continued in Cleveland last week but the drop was only \$1 as compared with \$2 the week before. Valley openhearth grades followed suit.

In Birmingham the new steel contract brought a quick release of scrap purchased earlier by steel mills.

Some steelmaking grades climbed \$1 or \$2 in Los Angeles and Seattle last week. Cast is still a fast-moving item on the West Coast, although there was no price increase.

Pittsburgh . . . Despite present lethargy of consumers, the market may be nearing another leveling off point. A leading crusher is buying turning futures on the basis that prices will firm up later in the year. Mills are out of the market except for spot tonnages, but an independent consumer may do some buying next week. Meanwhile, tone of the market is weak although prices remain unchanged.

Chicago . . . Mill sales in industrial grades of steelmaking scrap failed to halt the expectation of a further decline during July. Dealers, with

prices sharply depressed, were holding steady but dealer-broker prices are expected to decline further next week. Cast grades firmed slightly by a \$40 sale in drop-broken machinery in Chicago area, reflected price advances in nearby centers last week.

Philadelphia . . . Steel industry's labor settlement had no apparent effect on the scrap market in this district. The trade was strictly holiday-minded and business continued light.

New York . . . Holiday week came in slowly and the only ray of optimism was a lot of talk about export business—but there have been few firm orders. Inspection on these deals is tough and buyers are said to want at least 50 pct No. 1 heavy while the biggest proportion of scrap produced in this area is No. 2 bundles. Prices remained unchanged.

Detroit . . . Automotive bundles brought over \$26 on July industrial lists. This level is about \$3 under June, but still higher than had been anticipated locally. Vacations and wildcat strike results still throttle this market. The trade has also been upset by a complete revision in the purchasing setup at the area.

Cleveland . . . Downward drift in openhearth prices continued this week as brokers offered to deliver No. 1 heavy melting at \$25 in Cleveland and \$27 in Youngstown. Blast furnace and foundry grades were shaky but so far there has been enough demand to hold the price line on these items. Bearish sentiment here and in the Valley seems to indicate low point has not yet been reached.

Birmingham . . . Approval of the new steel contract brought a quick release by steel mills of scrap purchased earlier in the month but on which hold orders were issued last week when contract negotiations were broken off temporarily. No new orders were received immediately, how-

ever. Cast was moving spasmodically. Dealers say the flow of scrap into the yards dropped off this week after increasing for a couple of weeks. They say the above 100-degree temperature is probably the reason. Prices are unchanged.

St. Louis . . . With the decreased melt and no increase in business, steel mills in the St. Louis industrial district are buying scrap sparingly. No improvement is expected in July and although there is a weaker tendency, prices are unchanged. Foundry business is quiet.

Cincinnati . . . Openhearth prices remained strictly nominal as local consumers were completely inactive. One mill will probably be out of the market for the rest of this month while millwrights change strip mill housings. Rails and cast dropped from \$1 to \$2 on the basis of strong offers to sell.

Buffalo . . . Prices on steelmaking grades of scrap dropped \$1 a ton here. Dealers accepted the lower bid by a leading mill as ingot production fell and inventory stock increased. The mill's bid remained in the market after the sales. Other prices were unchanged.

Boston . . . Rumors of export business in No. 1 and No. 2 steel expected late this month have bolstered the feeling of this market—but that's about all that's happening in New England. No. 2 steel and No. 1 busheling slipped about 50¢ this week and while no sales were reported, unstripped motor blocks are appraised \$2 higher.

West Coast . . . Los Angeles and Seattle prices climbed \$1 to \$2 in some grades last week as larger mills matched prices being paid by smaller ones. In Los Angeles No. 1 bundles went up \$2. In Seattle the spread in prices settled at the top level of \$25 for No. 1 heavy melting and \$21 for No. 2 heavy melting. No. 3 bundles also went up \$1. One major San Francisco area foundry has gone into unstripped motor blocks for the first time in its history to make up east requirements. Foundry bought about 300 tons at \$29-\$31 and is doing its own stripping.



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EXPORTS-IMPORTS — LIVINGSTON & SOUTHDARD, INC. 99 Park Avenue, New York, N. Y. Cable Address: FORENTRACO

Scrap Prices

(Effective July 6, 1954)

Pittsburgh

No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and ms. turns.	14.00 to 15.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. punch'gs, plate	30.00 to 31.00
Heavy turnings	26.00 to 27.00
No. 1 RR. hvy. melting	30.00 to 31.00
Scrap rails, random lgth.	36.00 to 37.00
Rails 2 ft and under	42.00 to 43.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast	42.00 to 43.00
Cupola cast	35.00 to 36.00
Heavy breakable cast	30.00 to 31.00

Chicago

No. 1 hvy. melting	\$28.00 to \$30.00
No. 2 hvy. melting	25.00 to 27.00
No. 1 factory bundles	31.00 to 33.00
No. 1 dealers' bundles	28.00 to 30.00
No. 2 dealers' bundles	19.00 to 21.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Low phos. forge crops	35.00 to 36.00
Low phos. punch'gs, plate	32.00 to 34.00
Low phos. 3 ft and under	31.00 to 32.00
No. 1 RR. hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	36.00 to 37.00
Rerolling rails	43.00 to 44.00
Rails 2 ft and under	43.00 to 44.00
Locomotive tires, cut	33.00 to 34.00
Cut bolsters & side frames	35.00 to 36.00
Angles and splice bars	37.00 to 38.00
RR. steel car axles	40.00 to 41.00
RR. couplers and knuckles	35.00 to 36.00
No. 1 machinery cast	39.00 to 40.00
Cupola cast	36.00 to 37.00
Heavy breakable cast	29.00 to 30.00
Cast iron brake shoes	31.00 to 32.00
Cast iron car wheels	33.00 to 35.00
Malleable	40.00 to 41.00
Stove plate	32.00 to 33.00

Philadelphia Area

No. 1 hvy. melting	\$22.00 to \$23.50
No. 2 hvy. melting	20.00 to 21.50
No. 1 bundles	23.00 to 24.00
No. 2 bundles	17.00 to 18.00
Machine shop turn.	12.00 to 13.00
Mixed bor. short turn.	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Shoveling turnings	16.00 to 17.00
Clean cast chem. borings	20.00 to 21.00
Low phos. 5 ft and under	24.00 to 25.00
Low phos. 2 ft and under	25.00 to 26.00
Low phos. punch'gs	25.00 to 26.00
Elec. furnace bundles	23.00 to 24.00
Heavy turnings	21.00 to 22.00
RR. steel wheels	31.00 to 32.00
RR. spring steel	31.00 to 32.00
Rails 18 in. and under	41.00 to 42.00
Cupola cast	34.00 to 35.00
Heavy breakable cast	35.00 to 36.00
Cast iron carwheels	38.00 to 39.00
Malleable	36.00 to 37.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast	39.00 to 40.00
Charging box cast	36.00 to 37.00

Cleveland

No. 1 hvy. melting	\$24.00 to \$25.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	25.00 to 26.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Cut struct'r'l & plate, 2 ft & under	31.50 to 32.50
Drop forge flashings	25.00 to 26.00
Low phos. 2 ft & under	27.00 to 28.00
No. 1 RR. heavy melting	27.00 to 28.00
Rails 3 ft and under	42.00 to 43.00
Rails 18 in. and under	43.00 to 44.00
Railroad grates bars	27.00 to 28.00
Steel axle turnings	19.00 to 20.00
Railroad cast	41.00 to 42.00
No. 1 machinery cast	41.00 to 42.00
Stove plate	33.00 to 34.00
Malleable	39.00 to 40.00

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Youngstown

No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. plate	29.00 to 30.00

Buffalo

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 busheling	25.00 to 26.00
No. 1 bundles	25.00 to 26.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	14.50 to 15.50
Mixed bor. and turn.	17.50 to 18.50
Shoveling turnings	18.00 to 18.50
Cast iron borings	17.50 to 18.50
Low phos. plate	29.00 to 30.00
Scrap rails, random lgth.	33.00 to 34.00
Rails 2 ft and under	40.00 to 41.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast	41.00 to 42.00
No. 1 cupola cast	37.00 to 38.00

Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$20.00 to \$21.00
No. 2 hvy. melting	17.00 to 18.00
No. 1 bundles, openhearth	22.00 to 23.00
No. 2 bundles	17.00 to 18.00
New busheling	20.00 to 21.00
Drop forge flashings	20.00 to 21.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	9.00 to 10.00
Shoveling turnings	9.00 to 10.00
Cast iron borings	9.00 to 10.00
Low phos. punch's, plate	21.00 to 22.00
No. 1 cupola cast	32.00
Heavy breakable cast	23.00
Stove plate	28.00
Automotive cast	26.00

St. Louis

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	23.50 to 24.50
No. 1 bundles	25.00 to 26.00
No. 2 bundles	19.50 to 20.50
Machine shop turn.	12.00 to 13.00
Cast iron borings	13.00 to 14.00
Shoveling turnings	13.00 to 14.00
No. 1 RR. hvy. melting	30.00 to 31.00
Rails, random lengths	38.00 to 39.00
Locomotive tires, uncut	31.00 to 32.00
Angles and splice bars	31.00 to 32.00
Std. steel car axles	40.00 to 41.00
RR. spring steel	31.50 to 33.50
Cupola cast	42.00 to 43.00
Hvy. breakable cast	29.00 to 30.00
Cast iron brake shoes	30.00 to 31.00
Stove plate	37.00 to 38.00
Cast iron car wheels	30.00 to 31.00
Malleable	37.00 to 38.00
Unstripped motor blocks	29.00 to 30.00

New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$16.00 to \$17.00
No. 2 hvy. melting	12.00 to 14.00
No. 1 bundles	12.00 to 13.00
No. 2 bundles	11.00 to 12.00
No. 1 busheling	16.00 to 17.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	13.00 to 14.00
Low phos., 18 in. & under	32.00 to 33.00
Rails, random lengths	35.00 to 36.00
Rails, 18 in. and under	43.00 to 44.00
No. 1 cupola cast	38.00 to 39.00
Hvy. breakable cast	34.00 to 35.00
Drop broken cast	43.00 to 44.00

Birmingham

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	18.00
No. 1 bundles	20.00
No. 2 bundles	\$15.00 to 16.00
No. 1 busheling	20.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	13.00 to 14.00
No. 1 RR. hvy. melting	26.00 to 27.00
Scrap rails, random lgth.	34.00 to 35.00
Rails, 18 in. and under	37.50 to 38.50
Angles & splice bars	36.00 to 37.00
Rerolling rails	39.00 to 40.00
No. 1 cupola cast	43.50 to 44.50
Stove plate	40.50 to 41.50
Charging box cast	19.00 to 20.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	34.50 to 35.50
Mashed tin cans	15.00 to 16.00

Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$16.50 to \$17.00
No. 2 hvy. melting	14.00 to 14.50
No. 1 bundles	16.50 to 17.00
No. 2 bundles	11.00 to 12.25
No. 1 busheling	16.00 to 16.50
Electric furnace, 3 ft & under	17.00
Machine shop turn.	3.00 to 4.00
Mixed bor. and short turn.	6.00 to 7.00
Shoveling turnings	8.00 to 9.00
Clean cast chem. borings	9.00 to 10.00
No. 1 machinery cast	27.00 to 29.00
Mixed cupola cast	25.00 to 26.00
Heavy breakable cast	23.50 to 24.00
Stove plate	24.00 to 25.00
Unstripped motor blocks	9.00 to 10.00

Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	12.50 to 14.50
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Low phos., 18 in. & under	32.00 to 33.00
Rails, random lengths	35.00 to 36.00
Rails, 18 in. and under	43.00 to 44.00
No. 1 cupola cast	38.00 to 39.00
Hvy. breakable cast	34.00 to 35.00
Drop broken cast	43.00 to 44.00

San Francisco

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Cast iron borings	9.00
No. 1 RR. hvy. melting	33.00
No. 1 cupola cast	\$43.00 to 46.00

Los Angeles

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	15.00

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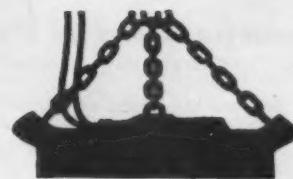
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President

Comparison of Prices

(Effective July 6, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	July 6 1954	June 29 1954	June 8 1954	July 7 1954
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Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	4.05¢	3.925¢	3.925¢	3.925¢
Cold-rolled sheets	4.95	4.775	4.775	4.775
Galvanized sheets (10 ga.)	5.45	5.275	5.275	5.275
Hot-rolled strip	4.05	3.925	3.925	3.925
Cold-rolled strip	5.75	5.513	5.513	5.513
Plate	4.225	4.10	4.10	4.10
Plates wrought iron	9.30	9.30	9.30	9.00
Stainl's C-R strip (No. 302)	41.50	41.50	41.50	41.50

Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. terne	7.75	7.75	7.75	7.75

Bars and Shapes: (per pound)				
Merchant bars	4.30¢	4.16¢	4.16¢	4.15¢
Cold-finished bars	5.40	5.22	5.22	5.20
Alloy bars	5.075	4.875	4.875	4.875
Structural shapes	4.25	4.10	4.10	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.05

Wire: (per pound)				
Bright wire	5.75¢	5.525¢	5.525¢	5.525¢

Rails: (per 100 lb.)				
Heavy rails	\$4.45	\$4.325	\$4.325	\$4.325
Light rails	5.35	5.20	5.20	5.20

Semifinished Steel: (per net ton)				
Rerolling billets	\$64.00	\$62.00	\$62.00	\$62.00
Slabs, rerolling	64.00	62.00	62.00	62.00
Forging billets	78.00	75.50	75.50	75.50
Alloy blooms, billets, slabs	86.00	82.00	82.00	82.00

Wire Rod and Skelp: (per pound)				
Wire rods	4.675¢	4.525¢	4.525¢	4.525
Skelp	3.90	3.75	3.75	3.75

Finished Steel Composite: (per pound)				
Base price	4.796¢	4.634¢	4.634¢	4.634¢

Finished Steel Composite				
Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.				

PIG IRON	Dollars per gross ton, f.o.b., subject to switching charges.					STAINLESS STEEL	Base price cents per lb. f.o.b. mill				
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← To identify producers, see Key on p. 149 →

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.	Product	301	302	303	304	316	321	347	410	416	430
Bethlehem B3	58.00	58.50	59.00	59.50		Ingots, rerolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00		14.25
Birmingham R3	52.38	52.88				Slabs, billets, rerolling	20.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25		18.50
Birmingham W9	52.38	52.88				Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Birmingham S5	52.38	52.88				Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Buffalo R3	56.00	56.50	57.00			Bars, wires, structural	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Buffalo H1	56.00	56.50	57.00			Plates	37.25	37.50	39.75	39.75	58.75	45.75	51.25	30.00	30.50	30.50
Buffalo W6	56.00	56.50	57.00			Sheets	38.25	41.50	48.75	43.75	62.75	50.50	59.25	34.25	41.25	34.75
Chicago I4	56.00	56.50	56.50	57.00		Strip, hot-rolled	29.75	32.00	36.75	34.25	53.25	41.00	46.50	26.25		27.00
Cleveland A5	56.00	56.50	56.50	57.00	61.00	Strip, cold-rolled	38.25	41.50	45.50	43.75	62.75	50.50	59.25	34.25	41.25	34.75
Cleveland R3	56.00	56.50	56.50	57.00												
Daingerfield L3	52.50	52.50	52.50													
Duluth I4	56.00	56.50	56.50	57.00												
Erie I4	56.00	56.50	56.50	57.00												
Everett M6	56.00	61.00	61.50													
Fantana K1	62.00	62.50														
Geneva, Utah C7	56.00	56.50														
Granite City G2	57.90	58.40	58.90													
Hubbard V1	56.50															
Minnequa C6	58.00	59.00	59.00													
Monesen P6	56.00															
Neville Isd. P4	56.00	56.50	56.50													
Pittsburgh U1	56.00															
Sharpville S3	56.00	56.50	56.50	57.00												
Steelton B3	58.00	58.50	59.00	59.50	64.00											
Swedoland A2	58.00	58.50	59.00	59.50												
Toledo I4	56.00	56.50	56.50	57.00												
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00											
Youngstown Y1	56.50	56.50	57.00													
N. Tonawanda T1	56.50	57.00														

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phosph., 1.75 to 2.00 pct); 50¢ per ton for each 0.50 pct manganese over 1 pct.; \$2 per ton for .05 to 0.75 pct nickel; \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

Silvery Iron: Buffalo, H1, \$68.25; Jackson, J1, G1, \$67.00. Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct. or more phosphorus. Add 75¢ for each 0.50 pct. manganese over 1.0 pct. Bessemer ferro-silicon prices are \$1 over comparable silvery iron.

	July 6 1954	June 29 1954	June 8 1954	July 7 1954
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	\$61.19	\$61.19	\$61.19	\$62.19
Foundry, Valley Basic, Valley furnace	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic, del'd, Philadelphia	60.27	60.27	60.27	61.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese, cents per lb. † 76 pct Mn base.	10.00¢	10.00¢	10.00¢	10.00¢

	Pig Iron Composite:	(per gross ton)		
Pig iron	\$56.59	\$56.59	\$56.59	\$56.59

	Scrap:	(per gross ton)		
No. 1 steel, Pittsburgh	\$28.50	\$28.50	\$29.50	\$45.50
No. 1 steel, Phila. area	22.75	22.75	22.75	45.50
No. 1 steel, Chicago	29.00	29.00	32.50	42.50
No. 1 bundles, Detroit	22.50	22.50	26.00	87.50
Low phosph., Youngstown	29.50	29.50	31.50	48.50
No. 1 mach'y cast, Pittsburgh	42.50	42.50	43.50	49.50
No. 1 mach'y cast, Philadelphia	39.50	39.50	39.50	45.50
No. 1 mach'y cast, Chicago				

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Prices shown on this and following pages do not reflect latest increases.

IRON AGE STEEL PRICES		<i>Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.</i>													
EAST		BILLETS, BLOOMS, SLABS			PIL- ING	SHAPES STRUCTURALS			STRIP						
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
Bethlehem, Pa.					\$82.00 B3		4.15 B3	6.20 B3	4.15 B3						
Buffalo, N. Y.	\$62.00 B3	\$75.50 R3, R3	\$72.00 B3, R3		4.925 B3	4.15 B3	6.20 B3	4.15 B3	3.925 B3, R3	5.45 B3, R7	6.00 B3	8.425 B3			
Claymont, Del.															
Coatesville, Pa.															
Conshohocken, Pa.										4.05 A2		5.90 A2			
New Bedford, Mass.											6.00 R6				
Harrison, N. J.														12.00 CII	
Johnstown, Pa.	\$62.00 B3	\$75.50 B3	\$92.00 B3			4.15 B3	6.20 B3								
Fairless, Pa.															
New Haven, Conn.											5.90 D1 6.20 A5				
Phoenixville, Pa.							3.80 P2		3.80 P2						
Sparrows Pt., Md.										3.925 B3	5.45 B3	6.00 B3	8.425 B3		
Wallingford, Conn.											5.90 W1				
Worcester, Mass.											6.30 A5			12.30 A5 12.45 H7	
Alton, Ill.										4.10 L1					
Ashland, Ky.										3.925 A7					
Canton-Massillon, Dover, Ohio			\$82.00 R3, T5											12.00 G4	
Chicago, Ill.	\$62.00 U1	\$75.50 R3, U1, W8	\$72.00 U1, W8, R3		4.925 U1	4.10 U1, W8	6.175 U1, Y1	4.10 U1	3.925 A1, W8	5.70 A1	5.95 R3		6.40 W8		
Cleveland, Ohio		\$75.50 R3								5.45 A5, J3		7.80 J3 8.15 A5		12.00 H5 12.15 H7	
Detroit, Mich.			\$84.00 R5							4.075 G3 4.15 M2	5.60 D1, D2, G3, M2, P11	6.10 G3	7.90 D2 8.30 G3		
Duluth, Minn.															
Gary, Ind. Harbor, Indiana	\$62.00 U1	\$75.50 U1	\$82.00 U1, Y1	4.925 J3	4.10 J3, U1	6.175 U1, I3			3.925 J3, U1, Y1	5.70 J3	5.95 U1, I3 6.45 Y1		6.40 U1		
Granite City, Ill.															
Indianapolis, Ind.										5.60 C5					
Mansfield, Ohio															
Middletown, Ohio										5.45 A7					
Niles, Warren, Ohio Sharon, Pa.										3.925 S1, R3	5.45 S1, T4, R3	5.95 S1, R3	7.60 R3 7.65 S1	6.40 S1	12.00 S1
Pittsburgh, Pa. Midland, Pa. Butler, Pa.	\$62.00 U1, J3	\$75.50 J3, U1	\$82.00 U1, C11	4.925 U1	4.10 J3, U1	6.175 J3, U1	4.10 U1	3.925 A7, P6 3.95 S7 4.425 S9	5.45 B4, J3, S7		7.80 J3	6.40 S9 6.45 S7		12.00 S1 12.15 S7	
Portsmouth, Ohio										3.925 P7					
Weirton, Wheeling, Fellowsbee, W. Va.							4.10 W3			3.925 W3	5.45 F3, W3	5.95 W3	8.15 W3		
Youngstown, Ohio										3.925 U1	5.45 Y1, C5	5.95 U1 6.45 Y1	8.30 Y1	6.40 U1	12.00 C1
Fontana, Cal.	\$70.00 K1	\$83.50 K1	\$101.00 K1				4.75 K1	6.825 K1	5.10 K1	4.70 K1	7.35 K1	7.05 K1		7.80 K1 13.65 K1	
Geneva, Utah		\$75.50 C7					4.10 C7	6.175 C7							
Kansas City, Mo.							4.70 S2	6.775 S2		4.525 S2		6.55 S2		7.00 S2	
Los Angeles, Terrace, Cal.		\$85.00 B2	\$102.00 B2				4.80 B2, C7	6.85 B2		4.675 B2, C7	7.50 C1			7.60 B2	
Minnequa, Colo.							4.55 C6			5.025 C6					
San Francisco, Niles, Pittsburg, Cal.		\$85.00 B2					4.75 B2 4.91 P9	6.80 B2		4.675 B2, C7					
Seattle, Wash.		\$89.00 B2					4.85 B2	6.90 B2		4.90 P12					
Atlanta, Ga.										4.125 A8					
Fairfield, Ala. City, Birmingham, Ala.	\$62.00 T2	\$75.50 T2					4.10 T2 4.13 R3	6.175 T2		3.975 R3, T2, C16		5.95 T2			
Houston, Tex.		\$83.50 S2	\$90.00 S2				4.50 S2			4.325 S2				6.80 S2	

**STEEL
PRICES**

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

	SHEETS								WIRE ROD	TINPLATE†		BLACK PLATE
	Hot-rolled 18 ga. & hrvr.	Cold- rolled	Galvanized 10 ga.	Enamel- ing 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	
Bethlehem, Pa.												
Buffalo, N. Y.	3.925 B3	4.775 B3				5.90 B3	7.225 B3		4.525 W6			
Claymont, Del.												
Coatesville, Pa.												
Conshohocken, Pa.	3.975 A2					5.90 A2						
Harrisburg, Pa.												
Hartford, Conn.												
Johnstown, Pa.									4.525 B3			
Fairless, Pa.	3.975 U1	4.825 U1				5.95 U1	7.275 U1			\$3.80 U1	\$7.50 U1	
New Haven, Conn.												
Phoenixville, Pa.												
Sparrows Pt., Md.	3.925 B3	4.775 B3	5.275 B3			5.90 B3	7.225 B3	8.075 B3	4.625 B1	\$8.80 B3	\$7.50 B3	
Worcester, Mass.									4.825 A5			
Trenton, N. J.												
Alton, Ill.									4.70 L1			
Ashland, Ky.	3.925 A7		5.275 A7	5.175 A7								
Canton-Massillon, Dover, Ohio			5.275 R1, R3						5.05 R1			
Chicago, Joliet, Ill.	3.925 A1, W8					5.90 U1			4.525 A5, N4,R3			
Sterling, Ill.									4.625 N4			
Cleveland, Ohio	3.925 J3, R3	4.775 J3, R3		5.175 R3		5.90 J3, R3	7.225 J3, R3		4.525 A5			
Detroit, Mich.	4.075 G3, M2	4.925 G3				6.05 G3	7.375 G3					
Newport, Ky.	3.925 N5											
Gary, Ind. Harbor, Indiana	3.925 J3, U1,Y1	4.775 J3, U1,Y1	5.275 U1, J3	5.175 J3, U1	5.875 U1	5.90 U1,I3 6.40 Y1	7.225 U1 7.725 Y1			\$8.70 I3, U1,Y1	\$7.40 J3, U1	6.10 U1, Y1
Granite City, Ill.	4.125 G2	4.975 G2	5.475 G2	5.375 G2							\$7.60 G2	6.30 G2
Kokomo, Ind.	4.025 C9		5.375 C9						5.05 C9	4.625 C9		
Mansfield, Ohio					5.875 E2				5.05 E2			
Middletown, Ohio		4.775 A7		5.175 A7	5.675 A7							
Niles, Ohio Sharon, Pa.	3.925 S1,R3 5.175 N3	4.775 R3 5.80 N3	5.275 N3	6.525 N3	5.45 S1 5.675 N3	5.90 S1,R3	7.225 R3				\$8.70 R3	\$7.40 R3
Pittsburgh, Pa. Midland, Pa. Butler, Pa.	3.925 J3, U1,P6, A7	4.775 J3, U1,P6	5.275 U1	5.175 U1		5.90 J3, U1	7.225 J3, U1	7.925 U1	4.525 A5 4.725 P6	\$8.70 J3, U1	\$7.40 J3, U1	6.10 U1
Portsmouth, Ohio	3.925 P7	4.775 P7							4.525 P7			
Weirton, Wheeling, Fellmanee, W. Va.	3.925 W3, W5	4.775 W3, W5,F3	5.275 W3, W5		5.675 W3, W5	5.90 W3	7.225 W3				\$8.70 W3, W5	\$7.40 W3, W5
Youngstown, Ohio	3.925 U1, Y1	4.775 Y1		5.175 Y1		5.90 U1, 6.40 Y1	7.725 Y1			4.525 Y1		
Fountain, Cal.	4.70 K1	5.875 K1				6.675 K1	8.275 K1			5.325 K1		
Geneva, Utah	4.025 C7											
Kansas City, Mo.									4.775 C6	4.885 S2		
Los Angeles, Terrance, Cal.	4.625 C7		6.275 C7							5.325 B2		
Minnequa, Colo.										4.775 C6		
San Francisco, Niles, Pittsburg, Cal.	4.625 C7	5.725 C7	6.025 C7						5.175 C7	\$9.45 C7	\$8.15 C7	
Seattle, Wash.												
Atlanta, Ga.												
Fairfield, Ala. Alabama City, Ala.	3.925 R3, T2	4.775 T2	5.275 R3, T2			5.90 T2			5.125 T2 5.225 R3	4.525 T2 R3	\$8.80 T2	\$7.50 T2
Houston, Texas	4.325 S2									4.925 S2		

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS					PLATES			WIRE		
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alley	Hi Str. Low Alloy	Migr. Bright
EAST	Bethlehem, Pa.				4.875 B3	6.325 B3	6.225 B3					
	Buffalo, N. Y.	4.15 B3 4.18 R3	4.15 B3 4.18 R3	5.25 B3	4.875 B3, R3	6.325 B3, B5	6.225 B3	4.10 B3			6.25 B3	5.525 W6
	Claymont, Del.							4.10 C4			5.55 C4	
	Coatesville, Pa.							4.10 L4			5.55 L4	
	Conshohocken, Pa.							4.10 A2	5.15 A2		6.25 A2	
	Harrisburg, Pa.							3.85 C3	5.15 C3			
	Hartford, Conn.			5.70 R3		6.775 R3						
	Johnstown, Pa.	4.15 B3	4.15 B3		4.875 B3		6.225 B3	4.10 B3		5.55 B3	6.25 B3	5.525 B3
	Fairless, Pa.	4.30 U1	4.30 U1			5.025 U1						
	Newark, N. J.			5.65 W10		6.65 W10						
	Camden, N. J.			5.85 P10		6.50 P10						
	Putnam, Conn.			5.75 W10								
	Sparrows Pt., Md.		4.15 B3					4.10 B3		5.55 B3	6.25 B3	5.625 B3
	Palmer, Worcester, Mansfield Mass.			5.75 B5 6.10 W11		6.775 B5						5.525 A1, W6
	Readville, Mass.			5.75 C14								
	Alton, Ill.	4.35 L1										5.70 L1
	Ashland, Ky.							4.10 A7				
MIDDLE WEST	Canton-Massillon, Ohio			5.20 R2 5.24 R3	4.875 R3, T5	6.325 R2, R3, T5						
	Chicago, Joliet, Ill.	4.15 U1, N4, W8 4.22 R3	4.15 N4 4.22 R3	5.20 A5, W10, W8, B5, L2	4.875 U1, W8, R3	6.325 A5, W8, W10, L2, R3, B5		4.10 U1, W8	5.15 U1	5.55 U1	6.25 U1	5.525 A1, R3, N4, W7
	Cleveland, Ohio	4.21 R3	4.21 R3	5.20 A5, C13		6.325 A5, C13		4.10 J3 4.16 R3	5.15 J3		6.25 J3	5.525 A1, C13
	Detroit, Mich.	4.30 R5, G3		5.35 R5, P8 5.40 B5 5.45 P3	4.975 R5 5.025 G3	6.425 R5 6.475 P8 6.525 B5, P3	6.375 G3	4.25 G3			6.40 G3	
	Duluth, Minn.											5.525 A5
	Gary, Ind. Harbor, Crawfordsville	4.15 I3, U1, Y1	4.15 I3, U1, Y1	5.27 R3	4.875 I3, U1, Y1	6.325 R3, M5	6.225 U1, I3 6.725 Y1	4.10 I3, U1, Y1	5.15 I3	5.55 U1	6.25 U1, I3 6.70 Y1	5.525 M1
	Granite City, Ill.							4.30 G2				
	Kokomo, Ind.											5.625 C9
	Sterling, Ill.	4.25 N4	4.25 N4									5.625 N4
	Niles, Ohio Sharon, Pa.							4.10 S1		5.55 S1	6.25 S1	
	Pittsburgh, Pa. Midland, Pa.	4.15 J3, U1	4.15 J3, U1	5.20 A5, C8, J3, W10 5.26 R3	4.875 U1, C11	6.325 A5, C11, W10, C8	6.225 J3, U1	4.10 J3, U1	5.15 U1	5.55 U1	6.25 J3, U1 J3, P6	
	Portsmouth, Ohio											5.525 P7
	Weirton, Wheeling, Follansbee, W. Va.		4.15 W3					4.10 W3				
	Youngstown, Ohio	4.15 U1, Y1 4.20 R3	4.15 U1, Y1 4.20 R3	5.20 Y1, F2	4.875 U1, Y1, C10	6.325 Y1, C10, F2	6.225 U1 6.725 Y1	4.10 U1, Y1			6.75 Y1	5.525 Y1
	Emeryville, Cal.	4.90 J5	4.90 J5									
	Fontana, Cal.	4.85 K1	4.85 K1		5.925 K1		7.475 K1	4.75 K1		6.60 K1	5.95 K1	
	Geneva, Utah							4.10 C7			6.25 C7	
	Kansas City, Mo.	4.75 S2	4.75 S2		5.475 S2		6.825 S2					6.125 S2
	Los Angeles, Torrance, Cal.	4.85 B2, C7	4.85 B2, C7	6.65 R3 6.96 R3	5.925 B2		6.925 B2					6.475 B2
	Minneapolis, Colo.	4.60 C6	4.75 C6					4.95 C6				5.775 C6
	Portland, Ore.	4.90 O2										
	San Francisco, Niles, Pittsburg, Cal.	4.85 C7, P9 4.90 B2	4.85 C7, P9 4.90 B2				6.975 B2					6.475 C7
	Seattle, Wash.	4.90 B2, N6, P12	4.90 B2, P12				6.975 B2	5.00 B2			7.15 B2	
WEST	Atlanta, Ga.	4.35 A8	4.35 A8									5.725 A8
	Fairfield, Ala. City, Birmingham, Ala.	4.15 T2, C16 4.18 R3	4.15 C16, T2 4.18 R3				6.225 T2	4.10 T2 4.13 R3		6.25 T2	5.525 R3, T2	
	Houston, Ft. Worth, Lone Star, Tex.	4.55 S2	4.55 S2		5.275 S2			4.50 L3, S2				5.525 S2

Steel Prices

Key to Steel Producers With Principal Offices

A1	Acme Steel Co., Chicago
A2	Alan Wood Steel Co., Conshohocken, Pa.
A3	Allegheny Ludlum Steel Corp., Pittsburgh
A4	American Cladmetals Co., Carnegie, Pa.
A5	American Steel & Wire Div., Cleveland
A6	Angell Nail & Chaplet Co., Cleveland
A7	Armcro Steel Corp., Middletown, O.
A8	Atlantic Steel Co., Atlanta, Ga.
B1	Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2	Bethlehem Pacific Coast Steel Corp., San Francisco
B3	Bethlehem Steel Co., Bethlehem, Pa.
B4	Blair Strip Steel Co., New Castle, Pa.
B5	Blin & Laughlin, Inc., Harvey, Ill.
C1	Calstrip Steel Corp., Los Angeles
C2	Carpenter Steel Co., Reading, Pa.
C3	Central Iron & Steel Co., Harrisburg, Pa.
C4	Claymont Products Dept., Claymont, Del.
C5	Cold Metal Products Co., Youngstown, O.
C6	Colorado Fuel & Iron Corp., Denver
C7	Columbia Geneva Steel Div., San Francisco
C8	Columbia Steel & Shafting Co., Pittsburgh
C9	Continental Steel Corp., Kokomo, Ind.
C10	Copperweld Steel Co., Pittsburgh, Pa.
C11	Crucible Steel Co. of America, New York
C12	Cumberland Steel Co., Cumberland, Md.
C13	Cuyahoga Steel & Wire Co., Cleveland
C14	Compressed Steel Shafting Co., Readville, Mass.
C15	G. O. Carlson, Inc., Thorndale, Pa.
C16	Cannors Steel Div., Birmingham
D1	Detroit Steel Corp., Detroit
D2	Detroit Tube & Steel Div., Detroit
D3	Driver Harris Co., Harrison, N. J.
D4	Dickson Weatherproof Nail Co., Evanston, Ill.
E1	Eastern Stainless Steel Corp., Baltimore
E2	Empire Steel Co., Mansfield, O.
F1	Firth Sterling, Inc., McKeesport, Pa.
F2	Fitzsimmons Steel Corp., Youngstown
F3	Follansbee Steel Corp., Follansbee, W. Va.
G1	Globe Iron Co., Jackson, O.

G2	Granite City Steel Co., Granite City, Ill.
G3	Great Lakes Steel Corp., Detroit
G4	Greer Steel Co., Dover, O.
H1	Hanna Furnace Corp., Detroit
I2	Ingersoll Steel Div., Chicago
I3	Inland Steel Co., Chicago
I4	Interlake Iron Corp., Cleveland
J1	Jackson Iron & Steel Co., Jackson, O.
J2	Jessop Steel Corp., Washington, Pa.
J3	Jones & Laughlin Steel Corp., Pittsburgh
J4	Joslyn Mfg. & Supply Co., Chicago
J5	Judson Steel Corp., Emeryville, Calif.
K1	Kaiser Steel Corp., Fontana, Cal.
K2	Keystone Steel & Wire Co., Peoria
K3	Koppers Co., Granite City, Ill.
L1	Laclede Steel Co., St. Louis
L2	La Salle Steel Co., Chicago
L3	Lone Star Steel Co., Dallas
L4	Lukens Steel Co., Coatesville, Pa.
M1	Mahoning Valley Steel Co., Niles, O.
M2	McLouth Steel Corp., Detroit
M3	Mercer Tube & Mfg. Co., Sharon, Pa.
M4	Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5	Monarch Steel Co., Inc., Hammond, Ind.
M6	Mystic Iron Works, Everett, Mass.
N1	National Supply Co., Pittsburgh
N2	National Tube Div., Pittsburgh
N3	Niles Rolling Mill Div., Niles, O.
N4	Northwestern Steel & Wire Co., Sterling, Ill.
N5	Newport Steel Corp., Newport, Ky.
N6	Northwest Steel Rolling Mills, Seattle
N7	Newman Crosby Steel Co., Pawtucket, R. I.
O1	Oliver Iron & Steel Co., Pittsburgh
O2	Oregon Steel Mills, Portland
P1	Page Steel & Wire Div., Monessen, Pa.
P2	Phoenix Iron & Steel Co., Phoenixville, Pa.
P3	Pilgrim Drawn Steel Div., Plymouth, Mich.
P4	Pittsburgh Coke & Chemical Co., Pittsburgh
P5	Pittsburgh Screw & Bolt Co., Pittsburgh
P6	Pittsburgh Steel Co., Pittsburgh
P7	Portsmouth Div., Detroit Steel Corp., Detroit
P8	Plymouth Steel Co., Detroit
P9	Pacific States Steel Co., Niles, Cal.
P10	Precision Drawn Steel Co., Camden, N. J.
P11	Production Steel Strip Corp., Detroit
P12	Pacific Steel Rolling Mills, Seattle
R1	Reeves Steel & Mfg. Co., Dover, O.
R2	Reliance Div., Eaton Mfg. Co., Massillon, O.
R3	Republic Steel Corp., Cleveland
R4	Roebling Sons Co., John A., Trenton, N. J.
R5	Rotary Electric Steel Co., Detroit
R6	Rodney Metals, Inc., New Bedford, Mass.
R7	Rame Strip Steel Co., Rome, N. Y.
S1	Sharon Steel Corp., Sharon, Pa.
S2	Sheffield Steel Corp., Kansas City
S3	Shenango Furnace Co., Pittsburgh
S4	Simonds Saw & Steel Co., Fitchburg, Mass.
S5	Sloss Sheffield Steel & Iron Co., Birmingham
S6	Standard Forging Corp., Chicago
S7	Stanley Works, New Britain, Conn.
S8	Superior Drawn Steel Co., Monaca, Pa.
S9	Superior Steel Corp., Carnegie, Pa.
S10	Sweet's Steel Co., Williamsport, Pa.
T1	Tonawanda Iron Div., N. Tonawanda, N. Y.
T2	Tennessee Coal & Iron Div., Fairfield
T3	Tennessee Products & Chem. Corp., Nashville
T4	Thomas Strip Div., Warren, O.
T5	Timken Steel & Tube Div., Canton, O.
T6	Tremont Nail Co., Warcham, Mass.
T7	Texas Steel Co., Fort Worth
U1	United States Steel Corp., Pittsburgh
U2	Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3	Fred Ulbrich & Sons, Wallingford, Conn.
W1	Wallingford Steel Co., Wallingford, Conn.
W2	Washington Steel Corp., Washington, Pa.
W3	Weirton Steel Co., Weirton, W. Va.
W4	Wheeland Tube Co., Wheeland, Pa.
W5	Wheeling Steel Corp., Wheeling, W. Va.
W6	Wickwire Spencer Steel Div., Buffalo
W7	Wilson Steel & Wire Co., Chicago
W8	Wisconsin Steel Co., S. Chicago, Ill.
W9	Woodward Iron Co., Woodward, Ala.
W10	Wycoff Steel Co., Pittsburgh
W11	Worcester Pressed Steel Co., Worcester, Mass.
Y1	Youngstown Sheet & Tube Co., Youngstown

Base discounts (per cent) f.o.b. mills. Base price about \$200 per net ton.

PIPE AND TUBING

STANDARD T. & C.	BUTTWELD												SEAMLESS												
	1/2 in.		3/4 in.		1 in.		1 1/4 in.		1 1/2 in.		2 in.		2 1/2-3 in.		2 in.		2 1/2 in.		3 in.		3 1/2-4 in.				
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	
Sparrows Pt. B3	24.25	9.0	27.25	13.0	29.75	16.5	32.25	17.25	32.75	18.25	33.25	18.75	34.75	19.5	34.75	18.5
Youngstown R3	26.25	11.0	29.25	15.0	31.75	18.5	34.25	19.25	34.75	20.25	35.25	20.75	36.75	20.5	36.75	20.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Fentons K1	13.25	+2.0	16.25	2.0	18.75	5.5	21.25	6.25	21.75	7.25	22.25	7.75	23.75	7.5	23.75	7.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Pittsburgh J3	26.25	11.0	29.25	15.0	31.75	18.5	34.25	19.25	34.75	20.25	35.25	20.75	36.75	20.5	36.75	20.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Alton, Ill. L1	24.25	9.0	27.25	13.0	29.75	16.5	32.25	17.25	32.75	18.25	33.25	18.75	34.75	19.5	34.75	18.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Sharon M3	26.25	11.0	29.25	15.0	31.75	18.5	34.25	19.25	34.75	20.25	35.25	20.75	36.75	20.5	36.75	20.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Fairless N2	24.25	9.0	27.25	13.0	29.75	16.5	32.25	17.25	32.75	18.25	33.25	18.75	34.75	19.5	34.75	18.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Pittsburgh NJ	26.25	11.0	29.25	15.0	31.75	18.5	34.25	19.25	34.75	20.25	35.25	20.75	36.75	20.5	36.75	20.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Wheeling W5	26.25	11.0	29.25	15.0	31.75	18.5	34.25	19.25	34.75	20.25	35.25	20.75	36.75	20.5	36.75	20.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Youngstown Y1	26.25	11.0	29.25	15.0	31.75	18.5	34.25	19.25	34.75	20.25	35.25	20.75	36.75	20.5	36.75	20.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Indiana Harbor Y1	25.25	10.0	28.25	14.0	30.75	17.5	33.25	18.25	33.75	19.25	34.25	19.75	35.75	19.5	35.75	19.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
Larion N2	26.25	11.0	29.25	15.0	31.75	18.5	34.25	19.25	34.75	20.25	35.25	20.75	36.75	20.5	36.75	20.5	15.75	0.75	19.75	3.0	22.25	5.5	23.75	7.0	
EXTRA STRONG PLAIN ENDS	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sparrows Pt. B3	27.75	14.0	31.75	18.0	33.75	21.5	34.25	20.25	34.75	21.25	35.25	21.75	35.75	20.5	35.75	20.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Youngstown R3	29.75	16.0	33.75	20.0	35.75	23.5	36.25	22.25	36.75	23.25	37.25	23.75	37.75	22.5	37.75	22.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Fairless N2	27.75	14.0	31.75	18.0	33.75	21.5	34.25	20.25	34.75	21.25	35.25	21.75	35.75	20.5	35.75	20.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Fentons K1	16.75	.....	22.75	.....	23.25	.....	23.75	.....	24.25	.....	24.75	.....	25.25	.....	25.75	.....	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0
Pittsburgh J3	29.75	16.0	33.75	20.0	35.75	23.5	36.25	22.25	36.75	23.25	37.25	23.75	37.75	22.5	37.75	22.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Alton, Ill. L1	27.75	14.0	31.75	18.0	33.75	21.5	34.25	20.25	34.75	21.25	35.25	21.75	35.75	20.5	35.75	20.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Sharon M3	29.75	16.0	33.75	20.0	35.75	23.5	36.25	22.25	36.75	23.25	37.25	23.75	37.75	22.5	37.75	22.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Pittsburgh NJ	29.75	16.0	33.75	20.0	35.75	23.5	36.25	22.25	36.75	23.25	37.25	23.75	37.75	22.5	37.75	22.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Wheeling W5	29.75	16.0	33.75	20.0	35.75	23.5	36.25	22.25	36.75	23.25	37.25	23.75	37.75	22.5	37.75	22.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Youngstown Y1	29.75	16.0	33.75	20.0	35.75	23.5	36.25	22.25	36.75	23.25	37.25	23.75	37.75	22.5	37.75	22.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Indiana Harbor Y1	28.75	15.0	32.75	19.0	34.75	22.5	35.25	21.25	35.75	22.25	36.25	22.75	36.75	21.5	36.75	21.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	
Larion N2	29.75	16.0	33.75	20.0	35.75	23.5	36.25	22.25	36.75	23.25	37.25	23.75	37.75	22.5	37.75	22.5	16.25	2.25	20.75	5.5	23.75	8.0	28.75	13.0	

Threads only, butt-welded and seamless 2 1/2 pt. higher discount. Plain ends, butt-welded and seamless, 3-in. and under, 4 1/2 pt. higher discount. Butt-weld jobbers' discount, 5 pct. Galvanized discounts based on zinc price in range of over 9¢ incl. per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt. e.g., zinc price in range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

-Steel Prices-

To identify producers, see Key on preceding page.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tin Plates	Track Bolts Treated
Bessemer U1	4.325	5.20	5.275				
So. Chicago R3				7.05			
Cleveland R3							
Endsley T2	4.325	5.20		7.05			
Fairfield T2		5.20		7.05			5.125
Gary U1	4.325	5.20					5.125
Ind. Harbor B3	4.325		5.275	7.05			5.125
Johnstown B3		5.20					
Joliet U1		5.20	5.275				
Kansas City S2				7.05			11.00
Lackawanna B3	4.325	5.20	5.275				5.125
Lebanon B3				7.05	10.50		11.00
Minneapolis C6	4.325	5.70	5.275	7.05			5.125
Pittsburgh O1					10.50		11.00
Pittsburgh P1					10.50		11.00
Pitt's, Cal. C7				7.05			
Seattle B7					7.55		5.275
Steeltown B3	4.325		5.275				5.125
Struthers Y1							
Terrance C7							5.275
Youngstown R3				7.05			

ELECTRICAL SHEETS

22-Gage	Hot-Rolled	Cold-Reduced (Coiled or Cut Length)	
		Semi- Processed	Fully Processed
F.o.b. Mill Cents Per Lb.	(Cut Lengths)*		
Field.....	.....	8.05	.....
Armature.....	8.15	8.40	8.90
Elect.....	8.75	9.00	9.50
Meter.....	9.75	10.00	10.50
Dynamo.....	10.65	10.90	11.40
Trans. 72.....	11.60	11.85	12.35
Trans. 65.....	12.15	Grain Oriented	
Trans. 58.....	12.65	Trans. 80.....	16.25
Trans. 52.....	13.65	Trans. 73.....	16.75

); Warren, U. (A)
Ceils 75¢ higher.

MERCHANT WIRE PRODUCTS

Cut Nails, carloads, base \$8.00 per keg (less 20¢ jobbers), at Conshohocken, Pa. (AZ).

* Alabama City and So. Chicago don't include zinc oxide. Galvanized products computed with zinc at 11.0¢ per lb.

WARE-HOUSES

WARE-HOUSES		Base price, f.o.b., dollars per 100 lb.																
Cities	City Delivery Charge	Sheets			Strip		Plates		Shapes		Bars		Alloy Bars					
		Hot-Rolled	Cold-Rolled (15 gage)	Galvanized (10 gage)	Hot-Rolled	Cold-Rolled		Standard Structural		Hot-Rolled	Cold- Finishe		Hot-Rolled A-4615	As rolled	Hot-Rolled A-4140	Annealed	Cold-Drawn A-4615	As rolled	Cold-Drawn A-4140	Annealed
Baltimore.....	\$.20	6.20	7.12	7.36 7.78	7.00	.....	6.45	6.98	6.86	8.17	.....	.....	.....	.....	.....	.....	.....	.....
Birmingham.....	.15	6.10	7.00	8.00 ²	6.30	.....	6.35	6.35	6.15	8.90	.....	.....	.....	.....	.....	.....	.....	.....
Boston.....	.20	6.89	7.53- 7.83	9.18- 8.65	7.13- 6.50	9.35 ²	7.13	7.06	6.87	8.35	12.40	11.94- 12.13	14.65	14.55- 14.58	14.58	14.30	14.30	14.30
Buffalo.....	.25	6.11	7.10	8.65	6.50	.....	6.45	6.49	6.27	7.65	.....	11.97	14.45	14.45	14.30	14.30	14.30	14.30
Chicago.....	.20	6.18	7.12	7.95	6.42	.....	6.33	6.46	6.28	7.30	.....	11.60	.....	.....	.....	.....	.....	14.05
Cincinnati.....	.20	6.30	7.11	8.00	6.66	.....	6.62	6.93	6.52	7.60	.....	11.85	.....	.....	.....	.....	.....	14.30
Cleveland.....	.20	6.18	7.12	8.25	6.58	.....	6.50	6.79	6.34	7.40	12.04	11.74	14.29	14.19	14.19	14.19	14.19	
Denver.....	7.95	8.85	10.45- 10.47	8.20	9.55	7.95	7.95	8.05	9.05	.....	.....	.....	.....	.....	.....	.....	15.75	
Detroit.....	.20	6.38	7.20	8.22	6.69	8.36	6.80	6.91	6.56	7.60	12.27	11.97	14.52	13.45- 14.42	13.45- 14.42	13.45- 14.42	13.45- 14.42	
Houston.....	.20	7.15	7.60	9.23	7.45	.....	7.20	7.35	7.45	9.30	.....	12.80	.....	.....	.....	.....	.....	.....
Kansas City.....	.20	6.85	.....	.....	7.09	.....	7.00	7.13	6.95	8.07	.....	.....	.....	.....	.....	.....	.....	.....
Los Angeles.....	.20	7.25	9.00	8.85- 9.50	7.55	.....	7.20	7.35	7.15	9.75	.....	12.90	.....	.....	.....	.....	.....	15.90
Memphis.....	.10	6.79	7.69	.....	6.90	.....	7.01	7.09	6.88	7.89- 8.76	.....	.....	.....	.....	.....	.....	.....	.....
Milwaukee.....	.20	6.35	7.20	8.12	6.59	.....	6.50	6.63	6.45	7.57	.....	11.77	.....	.....	.....	.....	.....	14.22
New Orleans.....	.15	6.51	7.41	.....	6.63	.....	6.73	6.81	6.60	8.37	.....	.....	.....	.....	.....	.....	.....	.....
New York.....	.30	6.78	7.52- 7.75	8.37- 8.41 ²	7.16	9.15 ²	6.99	6.90	7.06	8.43	12.29	11.99	14.54	14.44	14.44	14.44	14.44	14.44
Norfolk.....	.20	6.90	.....	.....	7.00	.....	7.00	7.00	7.00	8.50	.....	.....	.....	.....	.....	.....	.....	.....
Philadelphia.....	.25	6.35	7.13	7.87	7.02	.....	6.63	6.67	6.87	8.19	.....	11.75	.....	.....	.....	.....	.....	14.19
Pittsburgh.....	.20	6.18	7.12	8.00	6.55	.....	6.33	6.46	6.28	7.65	.....	11.60	.....	.....	.....	.....	.....	14.05
Portland.....	.10	7.60	8.45	9.05	7.65	.....	7.25	7.25	7.35	10.65	.....	.....	.....	.....	.....	.....	.....	.....
Salt Lake City.....	.20	8.60	10.50	10.50 ³	9.25	.....	8.10	8.25	9.20	11.25	.....	.....	.....	.....	.....	.....	.....	.....
San Francisco.....	.20	7.35	8.70	8.95- 9.45	7.60	.....	7.20	7.25	7.15	9.75	.....	12.90	.....	.....	.....	.....	.....	15.90
Seattle.....	.20	7.95- 8.15	9.30- 9.50	9.60- 9.80	7.80- 8.00	.....	7.40	7.30	7.40	10.45- 10.65	.....	13.15	.....	.....	.....	.....	.....	15.60
St. Louis.....	.20	6.48	7.42	8.25	6.72	7.70- 8.53	6.73	6.86	6.58	7.70	12.20	11.90	14.45	14.30- 14.35	14.30- 14.35	14.30- 14.35	14.30- 14.35	
St. Paul.....	.15	6.84	7.78	8.61	7.08	13.22	6.99	7.12	6.94	8.06	.....	12.42	.....	.....	.....	.....	.....	.....

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HIR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1) 500 to 1499 lb. (2) 20,000 lb or over. (3) 450 to 1499 lb. (4) 500 to 9999 lb. (5) 1000 lb or over. (6) 400 to 1499 lb. (7) 1500 to 3499 lb. (8) 2000 to 5999 lb.

-R SPRING STEEL

Cents Per Lb F.e.b. Mill	CARBON CONTENT				
	0.26	0.41	0.61	0.81	1.04
	0.40	0.60	0.80	1.05	1.35
Bridgeport, Conn. S7*	5.75	7.65	8.60	10.55	12.50
Carnegie, Pa. S9		7.65	8.60	10.55	12.50
Cleveland A1	5.45	7.65	8.60	10.55	12.50
Detroit D1	5.65	7.85	8.80	10.55	
Detroit D2	5.60	7.85	8.80		
Harrison, N. J. C11			8.90	10.85	13.00
Indianapolis C5	5.60	7.80	8.80	10.55	
New Castle, Pa. B4	5.80	8.80	8.80		
New Haven, Conn. D1	5.90	7.95	8.90	10.85	
Riverside, Ill. A1	5.70	7.80	8.75	10.70	13.00
Buffalo, N. Y. R7	5.45	7.65	8.60	10.55	12.50
Sharon, Pa. S1	5.45	7.65	8.60	10.55	12.50
Trenton R7		7.95	8.90	10.45	13.00
Wallingford W7	6.20	7.95	8.90	10.85	13.00
Warren, Ohio T4	5.45	7.65	8.60	10.55	12.50
Weirton, W. Va. W3	5.45	7.65	8.60	10.55	12.50
Worcester, Mass. A5	6.30	7.95	8.90	10.85	13.00
Youngstown C5	5.45	7.65	8.60	10.55	

* Sold on Pittsburgh basis

BOILER TUBES

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Welded	
	OD. In.	B.W. Ga.	H.R.	C.D.	H.R.	C.
Babcock & Wilcox..	2	13	27.34	32.98	26.51	31.50
	2½	12	36.82	44.41	35.70	43.50
	3	12	42.52	51.28	41.23	49.58
	3½	11	49.63	59.87	48.13	58.00
	4	10	65.91	79.50	63.92	77.00
National Tube.....	2	13	.....	32.98	26.51	31.50
	2½	12	36.82	44.41	35.70	43.50
	3	12	42.52	51.28	41.23	49.58
	3½	11	49.63	59.87	48.13	58.00
	4	10	65.91	79.50	63.92	77.00
Pittsburgh Steel....	2	13	27.34	32.98	.....	.....
	2½	12	36.82	44.41	.....	.....
	3	12	42.52	51.28	.....	.....
	3½	11	49.63	59.87	.....	.....
	4	10	65.91	79.50	.....	.....

Miscellaneous Prices

TOOL STEEL F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.48
18	4	1	—	5	2.16
18	4	2	—	—	1.64
1.5	4	1.5	8	—	.895
6	4	2	6	—	1.005
High-carbon chromium					.70
Oil hardened manganese					.39
Special carbon					.355
Extra carbon					.30
Regular carbon					.25
Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.					

CAST IRON WATER PIPE

Per Net Ton	
6 to 24-in., del'd Chicago	\$111.80 to \$115.30
6 to 24-in., del'd N.Y.	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$129.50 to \$131.50
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.	
<i>Gross Ton</i>	
Openhearth lump	\$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.15
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	9.90
Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.	

COKE

Furnace, beehive (f.o.b. oven)	Net-Ton Connellsville, Pa.	\$14.25 to \$14.50
Foundry, beehive (f.o.b. oven)	Connellsville, Pa.	\$16.50 to \$17.00
Foundry, oven coke		
Buffalo, del'd		\$28.08
Chicago, f.o.b.		24.50
Detroit, f.o.b.		25.50
New England, del'd		26.05
Seaboard, N.J., f.o.b.		24.00
Philadelphia, f.o.b.		23.00
Swedeland, Pa., f.o.b.		23.85
Palensville, Ohio, f.o.b.		24.00
Erie, Pa., f.o.b.		25.00
Cleveland, del'd		27.43
Cincinnati, del'd		26.55
St. Paul, f.o.b.		23.75
St. Louis, f.o.b.		26.00
Birmingham, f.o.b.		22.65
Lone Star, Tex., f.o.b.		18.50

ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed

GRAPHITE			CARBON		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
24	84	20.80	48	100, 110	8.95
20	72	20.00	35	110	8.95
12 to 18	72	20.50	30	110	8.95
7 to 10	60	21.00	24	72 to 84	9.10
8	60	23.25	20	90	9.95
4	40	28.00	17	72	9.10
3	40	27.25	14	72	9.50
2½	30	28.00	16, 12	80	10.30
2	24	43.50	8	80	10.55

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices (Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

Pot Off List	Less Keg	Less Keg	Hvy. K.
Reg.			
1/2 in. & smaller +1	15	+2	18
9/16 in. & 5/8 in. +7	11	+32*	+10*
3/4 in. to 1 1/2 in. inclusive ... +8	10	+27**	+6**
1 1/4 in. & larger +9	9	+27	+6
* 9/16 to 5/8 in.			
** 5/8 to 1 1/2 in.			

Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	9	24	+20	net
3/4 in. to 1 1/2 in. inclusive ... +1	16	+9	9	
1 1/4 in. & larger +16	3	+20	net	

Nuts, Cold Punched—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	9	24	+2	15
3/4 in. to 1 1/2 in. inclusive ... +1	16	+9	9	
1 1/4 in. & larger +16	3	+20	net	

Nuts, Semi-Finished—Hexagon

1/2 in. & smaller	23	36	14	28
9/16 in. & 5/8 in.	18	32	4	20
3/4 in. to 1 1/2 in. inclusive ... +1	23	+8	10	
1 1/4 in. & larger +14	5	+20	Light net	

Stove Bolts

Pot Off List

Packaged, steel, plain finished	4 1/2	10
Packaged, plain finish	25 1/2	10
Bulk, plain finish**	55*	
* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.		
** Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.		

Rivets

Base per 100 lb

1/2 in. & larger	\$8.90
7/16 in. and smaller	30

Cap and Set Screws

(In bulk)

Pot Off List

Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in. SAE 1020, bright	40
5/16 in. thru 1 in. up to & including 6 in.	26
5/8 in. thru 5/8 in. x 6 in. & shorter	
high C double heat treat	43
3/4 in. thru 1 in. up to & including 6 in.	33
Milled studs	17
Flat head cap screws, listed sizes	12
Flange head cap, listed sizes	7
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	37

Machine and Carriage Bolts

Pot Off List

Less Case	C.
1/2 in. & smaller x 6 in. & shorter	4
9/16 in. & 5/8 in. x 6 in. & shorter	5
3/4 in. & larger x 6 in. & shorter	3
All diam. longer than 6 in.	+4
Lag, all diam. x 6 in. & shorter	13
Lag, all diam. longer than 6 in.	27
Lag, all diam. longer than 6 in.	8
Plow bolts	30

REFRACTORIES

Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$109.00
No. 1 Ohio	102.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	102.00
No. 2 Ohio	93.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	16.00

Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$115.00
Childs, Hays, Pa.	120.00
Chicago District	125.00
Western Utah	131.00
California	138.00

Super Duty Hays, Pa., Athens, Tex., Windham Curtner, Calif.	132.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	150.00
Silica cement, net ton, bulk, Hays, Pa.	21.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	20.00
Silica cement, net ton, bulk, Utah and Calif.	28.50

Chrome Brick

Per net ton

Standard chemically bonded Balt.	\$86.00
Standard chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

Magnesite Brick

Per net ton

Standard Baltimore	\$109.00
Chemically bonded, Baltimore	97.50

Grain Magnesite

St. ¾-in. grains

Domestic, f.o.b. Baltimore	\$64.40
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	38.00
in bulk	43.75
in sacks	

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	\$14.50
Midwest	14.60
Missouri Valley	13.65

FLUORSPAR

Washed gravel, f.o.b. Rosiclare, Ill.	

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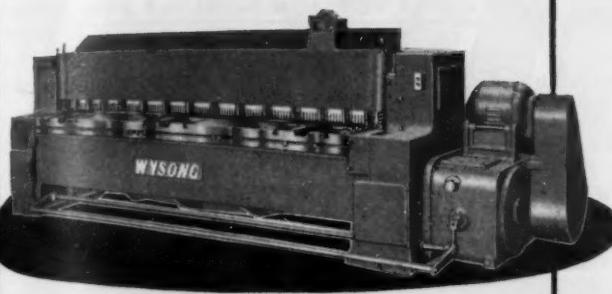
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No. 2H KEARNEY & TRECKER Horizontal Mill, new 1943
No. 2 VAN NORMAN Plain Horizontal Mill, new 1943
No. 2MI CINCINNATI Vertical Mill, new 1951
No. 4 CINCINNATI High Speed Dial Type Plain Horizontal Mill, 1943
No. 3-24 CINCINNATI High Power Plain Mill, rectangular overarm
16" x 78" centers REED PRENTICE, Model AA Toolroom, 1943
27" x 12" centers LODGE & SHIPLEY Selective Geared Head Lathe, AC-MD
36" x 12" centers AMERICAN Heavy Duty 16 Speed Geared Head Lathe, AC-MD
No. 3A WARNER & SWASEY Turret Lathe, Timken Spindle, electric chuck, tooling
No. 3 WARNER & SWASEY Universal Turret Lathe, Serial 800,000, new 1944, two speed motor in base
No. 12 GISHOLT Simplimatic Turret Lathe, new 1947
36" BULLARD High Speed Spiral Drive Vertical Turret Lathe, 200 RPM, fine feed, new 1942
42" BULLARD Spiral Drive Vertical Turret Lathe, extra high column
42" KING Vertical Boring Mill, 10 HP AC motor, power rapid traverse
No. 7 GALLMEYER & LIVINGSTON Hydraulic Universal Tool & Cutter Grinder, power feeds, new 1943
30" MORTON Hydraulic Keyseater, 1942
No. 6A MITTS & MERRILL Keyseater, capacity 0 to 4" width, 36" stroke, tooling
4' FOSDICK Sensitive Radial Drill, new 1951
4' HAMMOND Jackknife Radial Drill tapping attachment, new 1948
5'-13" column CARLTON Radial Drill, AC motor & gearbox on base
6'-17" column CINCINNATI BICKFORD Super Service Radial Drill, power rapid traverse, motor on arm
48" x 48" x 12" NILES Double Housing Planer, 2 rail heads, 1 side head, power rapid traverse
48" x 48" x 12" CINCINNATI Double Housing Planer, 2 rail heads, 1 side head, power rapid traverse

We Can Arrange Time Payments or Rentals with Option to Purchase

O'Connell
MACHINERY CO.
of BUFFALO, n. y.
1693 GENESEE ST.

The Clearing House

NEWS OF USED AND REBUILT MACHINERY

Await Defense Pickup . . . Defense business, in the Midwest, despite talk of \$5 to \$12 billion remaining unlet in the government defense coffers, hasn't improved greatly in the past 30 days. Shipment of tools in small quantities to West Coast defense plants continues, but has not gained any great strength. Chicago area defense producers, if they are getting fresh defense orders, are not tooling up in sufficient quantities to make a noticeable splash.

Document Depreciation Case . . . Despite the setback of June 9, when Senate Finance Committee reconfirmed its decision to disregard pleas for accelerated used tool depreciation rates, Machinery Dealer's National Assn. continues plans for a further push along these lines. Used machine tool sales will be checked carefully this year and the findings probably be used in documenting another attempt to achieve improved depreciation next fall or early winter.

Similarly, under MDNA's consideration is a plan to bring the arguments for freight rate reclassification before the ICC. Preliminary action is expected within the next 45 days.

NISA Seeks Faster Write-Offs . . . A resolution asking that the accelerated depreciation provisions of the Internal Revenue Code (HR 8300) be revised to apply equally to both new and used assets was passed by the National Industrial Service Association, Inc., trade association of electric motor shops, at its annual convention held recently in Detroit.

Present proposals to revise the Internal Revenue Code limit depreciation methods to new assets as distinguished from used and reconditioned assets, provisions which the 800 shop operators attending the convention felt would be discriminatory against purchasers and users of reconditioned and used assets. Members

of NISA sell reconditioned as well as new electrical equipment.

. . . Therefore, be it resolved that the members of the NISA in annual convention assembled this 15th day of June, 1954, composed of 1,300 members servicing, reconditioning and dealing in used, as well as new, electrical and mechanical equipment, urgently recommend to the appropriate Federal agencies that in all fairness to both users and suppliers, the liberalized depreciation provisions under the proposed revisions of the Internal Revenue Code shall be so revised to apply equally to both used and new assets; and

Be it further resolved that the directors, officers and appropriate committees be and are hereby instructed to further the above recommendations in all practical ways."

Set Up Rebuild Program . . . A few weeks ago Machinery Dealer's National Assn. was asked by Army Ordnance officials at Rock Island Arsenal to help them plan and carry out a machine tool rebuilding program. (THE IRON AGE, June 24, 1954, p. 260).

Representatives of interested machinery rebuild firms have since met with Ordnance men at Rock Island and have set up the project.

Prior to letting contracts, Ordnance desired teams of rebuilding dealers to make a final inspection of the tools in question with an ordnance inspector. The inspections were made on June 23rd and 24th in five locations and on June 29th and 30th in twelve other locations.

Contracts for the rebuilding project will be let at various local Ordnance headquarters by the chiefs of local ordnance departments.

MDNA spokesmen hope that this Ordnance project will pave the way for more rebuilding activities for Ordnance and other Government agencies by the used machinery industry.